ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

How to drive a "Bargain" in trenches

Old fashioned sheeting was difficult to drive and costly because new sheeting generally had to be used on every job. Then Armco engineers saw how a little sheeting sense would make profit dollars for contractors and other construction men. They developed Armco Steel Sheeting.

This practical sheeting has a small displacement for fast driving. Corrugated metal design provides ample strength without excess weight. Best of all, Armco Steel Sheeting can be used again and again. The sturdy sections pull easily without damage and save the cost of new sheeting on succeeding jobs.

Between jobs there is no costly storage problem. Units nest together conveniently in a small area. Light weight reduces handling and transportation costs.

Making products simpler and more efficient has been a prime goal at Armco for more than 40 years. So has the designing of products to meet specific needs. Today you can bring your drainage and construction problems to Armco with full assurance you will receive all the benefits of long experience, extensive research, and a real interest in helping you solve these problems.

Armco has a complete range of engineered products and convenient, authoritative data to help you. If your problem is difficult or unusual, why not talk it over with us.

ARMCO

ARMCO DRAINAGE & METAL PRODUCTS, INC.

MIDDLETOWN, OHIO • OFFICES AND PLANTS IN PRINCIPAL CITIES

SUBSIDIARY OF ARMCO STEEL CORPORATION

Berkeley, California ★ Middletown, Ohio ★ South Bend, Indiana ★ Baltimore, Maryland
Denver, Colo. ★ Des Moines, Iowa ★ Atlanta, Ga. ★ Topeka, Kansas ★ Houston, Texas
Minneapolis, Minnesota ★ Portland, Oregon ★ Washington, D. C. ★ Guelph, Ontario

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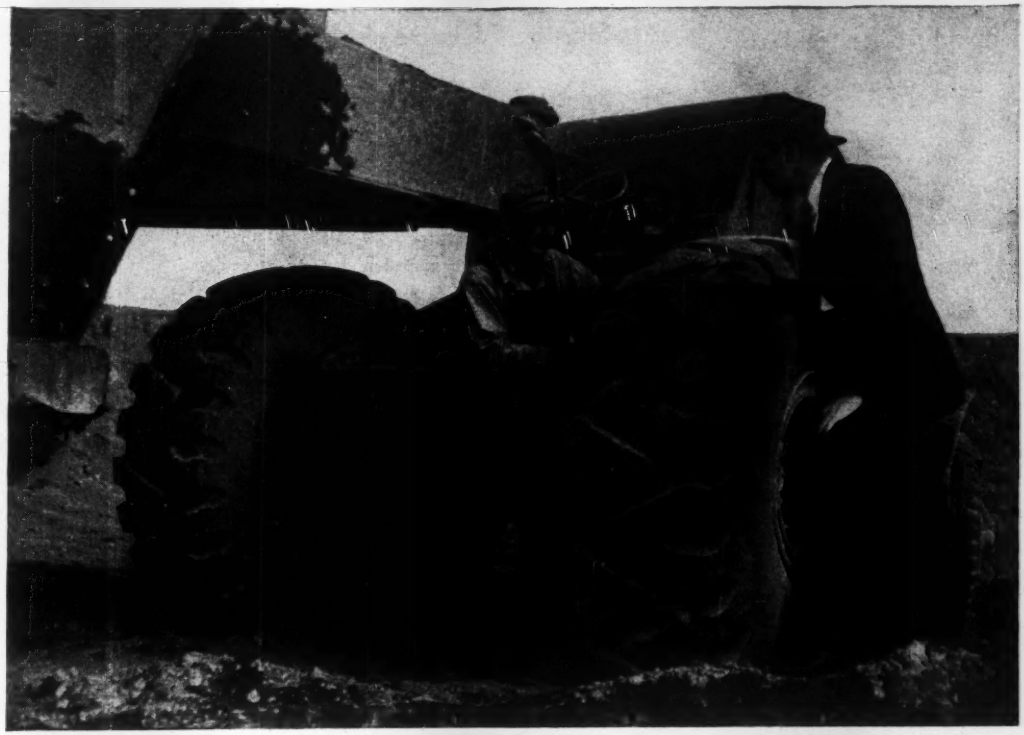

Ready for 45 tons on a 60,000-mile trip

MIKE WEATHERBY, shown left above, is supervisor of a man-sized moving job.

As an operator of off-the-road equipment for the Basalt Rock Company, Napa, California, he hauls average gross loads of 45 tons of sand and gravel from the pits to the company's processing plant.

And because the BFG Universal tires on his rig can take it, he moves more materials farther, at less cost to his company.

These big tires have greater bruise resistance — greater ability to absorb and withstand the shocks encountered in drive wheel service under such heavy loads. This is because these BFG tires have the patented *double nylon shock shield* built between the tread and rayon cord body. Yet this added protection (which is exclusive with B. F. Goodrich) is provided at no extra cost to his company.

While pulling 90,000 pounds to the plant, Mike's equipment encounters soft, wet dirt and gravel — hard on traction — with an occasional sharp rock thrown in as a surprise package. Yet the special rubber compound built into the husky, wedge-shape tread lugs resists cutting while giving positive two-way traction.

And these tires have been giving an average of 60,000 miles of service!

B. F. Goodrich builds special off-the-road tires for every type of hauling job. See your local B. F. Goodrich dealer. Start now to enjoy the benefits of longer tire life and lower operating overhead. *The B.F.Goodrich Company, Akron, Ohio.*

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MEASUREMENT
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ENGINEERING NEWS-RECORD

ABP Member ABC

Volume 146 APRIL 26, 1951 No. 17

WALDO G. BOWMAN
Editor

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MAKE YOUR KEY MACHINE A REAL ROCK SHOVEL
PROFIT
NORTHWEST
CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

Months ahead of schedule, the main fill of Farmington Dam was completed—substantially lessening damage from historic 1950 winter floods which poured through much of the fertile San Joaquin Valley. Key factor in early completion was the *consistent production* of six Wooldridge Terra Cobras—the kind of *consistent production* which spells "PROFITS" on any earthmoving job. Rugged dependability and extreme simplicity of maintenance again paid off with minimum down-time. Accurate job statistics proved a 94.7% efficiency record for the Cobras. Thus, each machine made the most of its fast full-loading, quick dumping, and high speed hauling characteristics. Protect your next contract with the assured *consistent production* of Wooldridge Terra Cobras—proved for long or short hauls.

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WOOLDRIDGE

The water main that never grows old—

"Century"®

ASBESTOS-CEMENT PIPE!

Original installation of "Century" Pipe previous to relaying it at the new lower grade.

Engineers: Tighe and Bond, Holyoke, Mass.
Contractors: Scott Bros., Ludlow, Mass.

CONSIDER the experience of water department officials in South Hadley Falls, Mass.: In 1950, it was decided to add three miles to the existing system of "Century" Pipe. At the same time, it was necessary to relocate several hundred feet of the original pipe to make it conform to the grading plans for a new development area. But, because "Century" Pipe never grows "old," there were no difficulties involved: A trench was dug to the new grade paralleling the original pipe run, and the same "Century" Pipe, with *the same Simplex Couplings was relaid and reused at the new level!*

The high re-use value is just one example of the continuing economies of "Century" Asbestos-Cement Pipe—economies that start with the low cost of the pipe. "Century" Pipe, though exceptionally strong, is light in weight—is economical to ship and store; can be handled easily and laid quickly. It can be cut and tapped in the field. And, because "Century" Pipe never tuberculates and will not rust or corrode, its original carrying capacity never decreases; it does not increase pumping costs; the pipe is always efficient, always "new"!

Before you buy or specify any pipe for water mains, get the complete story on K&M "Century" Asbestos-Cement Pipe. We'll gladly send details upon request.

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best in asbestos

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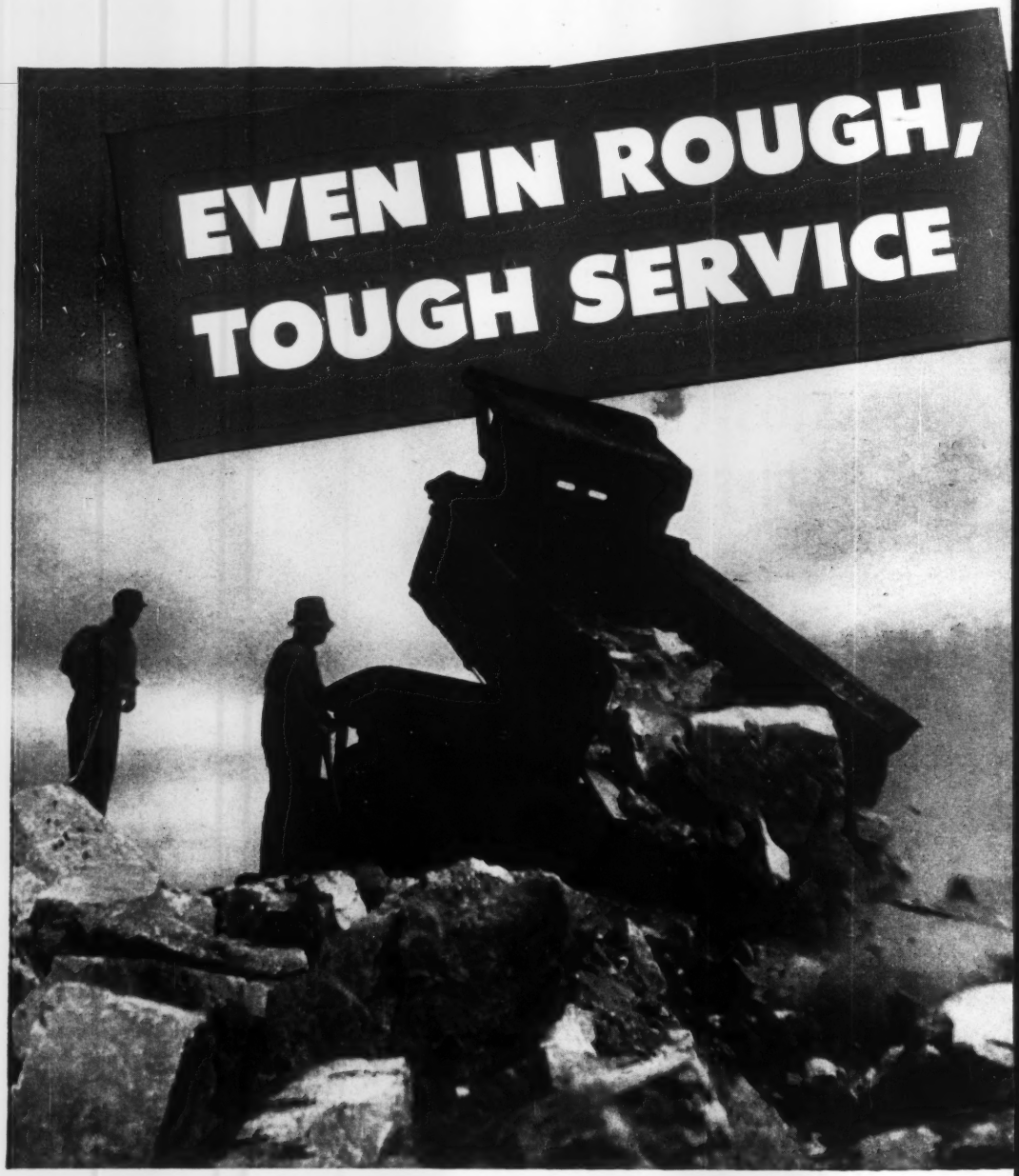
K&M Asbestos Rope for yarning bell and spigot joints reduces the hazard of high bacterial content following the laying of water mains. Write for details.

See us at Booths 35 and 36, American Water Works Association Convention, Miami, Florida, April 29-May 4, 1951



TUNE IN . . .
TEXACO STAR THEATER
starring
MILTON BERLE
on television
every Tuesday night.
See newspaper for
time and station.

TEXACO

TEXACO

When you use *Texaco Marfak*, your bearings get real protection, and—*the protection lasts!* This tough, tenacious lubricant *stays in the bearings* in spite of heavy loads, the pounding jolts of off-highway service, or puddle splash. *Texaco Marfak* wards off both wear and rust . . . assures longer parts life . . . lower maintenance costs.

You can also assure similar long-lasting protection for wheel bearings by using *Texaco Marfak Heavy Duty*. It seals out dirt and moisture . . . seals itself *in* the bearings and stays *off* the brakes. You thus get greater operating safety as well as greater protection against wear and rust. Lower maintenance costs are assured. No seasonal change is necessary.

Two More Economies

Engines — heavy-duty gasoline or Diesel — run better and more economically when lubricated with *Texaco Ursa Oil X***. Its fully detergent-dispersive properties keep engines clean . . . keep maintenance costs and fuel consumption low.

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Adopt Texaco's Simplified Lubrication Plan and gain cost-saving efficiency. A Texaco Lubrication Engineer will gladly tell you all about it. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

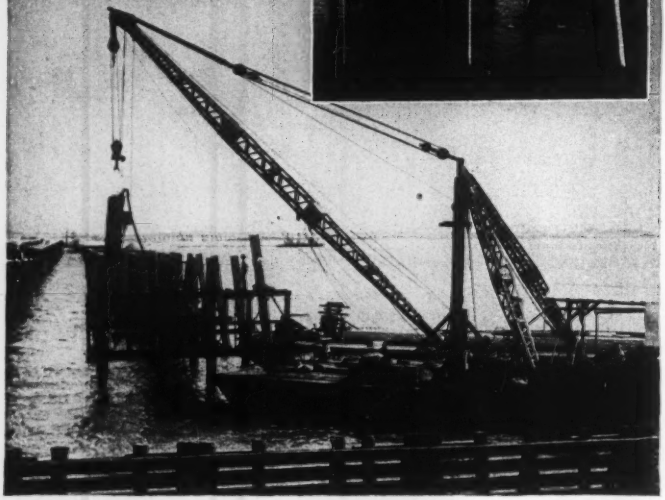
MORE THAN 400 MILLION POUNDS OF **MARFAK** HAVE BEEN SOLD!

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

FAST PILE DRIVING
INTO ROUGH WATER
during the Hurricane Season

A McKiernan-Terry S-5 Single-Acting Pile Hammer drives concrete piles for the 3,740 ft long Pensacola Beach Bridge, which consists of 104 pile bents and a double leaf bascule span.



Keeping an eye on the Florida weather, Powell Brothers, Inc., Fort Lauderdale, Fla., subcontractor on the new Pensacola Beach Bridge, spanning Santa Rosa Sound, had to do a pile driving job in very rough water . . . at a fast pace. That's why they chose a powerful McKiernan-Terry S-5 Single-Acting Pile Hammer. • The McKiernan-Terry Hammer speedily drove 438 18-inch square concrete piles, both vertical and battered, ranging from 40 to 70 feet in length, into waters approximately 20-30 feet deep. Johnson, Drake and Piper, Inc., general contractor, stated that "the entire pile job was completed in 3½ months in a very satisfactory manner . . . though work was carried on during the hurricane season" • You, too, can profit by using fast-driving McKiernan-Terry equipment. Complete line includes 15 sizes of pile hammers and 2 sizes of extractors. Write for bulletin.

GRAB BUCKETS

TRANSFER BRIDGES

COAL TOWERS

HONING TO 42" I. D.

McKIERNAN TERRY

McKIERNAN-TERRY CORPORATION MANUFACTURING ENGINEERS 13 PARK ROW, NEW YORK 38, N. Y.

MK-296 *Plants: Harrison, N. J. and Dover, N. J.*

NEWS BRIEFS

A purer Susquehanna—Orders to construct sewage treatment works by a specified date have been issued by the Pennsylvania Sanitary Water Board under the Clean Streams program to the remaining seven communities on the Susquehanna River watershed which had not been given such orders at the time of the original action last June. Orders to the original list of communities require construction by June 1, 1952. Those to the last list of seven communities set the date of Jan. 1, 1953.

Housing cooperative—Faced with rental increases on their homes, a group of Omaha, Neb., school teachers decided it was time to look into the possibility of acting cooperatively in meeting their housing problems. A meeting was called; a committee was named to spearhead the movement, and cooperators paid $25 each to cover expenses. A suitable site was finally obtained; it was decided to build a 12-story apartment house, and cooperators again made payments of more than $80,000. Last October, the FHA issued a commitment in the amount of $595,000 under the cooperative housing provisions of Section 213 of the National Housing Act as amended. Construction of the project is now under way. The cooperative group is setting up a nonprofit corporation which will hold title to the apartment building and give long-term leases to members.

No work, no pay—In Johnson and Henry counties, Ind., commissioners have refused to pay claims of $782.50 made by three county surveyors for services, which, it is claimed, were not rendered. The men are otherwise employed, and it is alleged that they give very little time to their elective office.

Direct action—Many motorists in Pleasantville, N. Y., don't like the "No left turn" signs at Manville Road and the Saw Mill River parkway, but it remained for an ex-Army captain to do something about it. At night he removed several of the signs and threw them into the river as a hint to the authorities. However, he was a decent fellow at heart. His conscience bothered him so he went to the parkway police headquarters and gave himself up and in police court paid $35 in fines for malicious mischief. He did not say whether or not he thought he had got his money's worth.

(*Continued on page 11*)

Raincoats for structures...

Sprayed, Brushed or Troweled on!

Keep moisture at bay... it wreaks havoc!

Specify Flintkote Protective Coatings . . . for structural steel, exposed concrete, inside surfaces of masonry, insulation materials . . . wherever dampness and corrosion are a problem.

Flintkote Protective Coatings are available in both asphalt cutback and emulsion types, and can be applied by spray, brush or trowel.

Whatever your waterproofing or dampproofing system, choose from mastics, semi-mastics and liquid-asphaltic compounds . . . fibrated, non-fibrated Flintkote Protective Coatings.

Available also are asphalt primers, caulking compounds, membrane reinforcing and spandrel cloth—all of them effective "raincoats" for guarding structures against moisture.

Write for complete specifications and application data on using these efficient materials in both new construction and maintenance.

THE FLINTKOTE COMPANY, *Industrial Products Division,*
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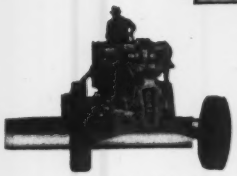
FLINTKOTE *Products for Industry*

Adams Motor Graders

All these blade positions —and more too—without mechanical adjustments

Ditch Cutting



Reach Outside Wheels

Reverse Ditching or Blading

● On most construction work—ditching, low and high bank slopes, wide shoulder reach, etc.—the operator of an Adams Motor Grader quickly and easily obtains all necessary blade positions through convenient cab controls—*without mechanical adjustments.* Only occasional work, calling for extreme reach, requires operator to shift blade on circle or change lift linkage.

The ability of Adams Motor Graders to provide this wide range of blade positions—*without mechanical adjustments*—is one of the big reasons why they are the fastest, most efficient and economical graders on the market. Ask your local Adams dealer for complete information.

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Only Adams has this exclusive combination of advantages

- **8 Overlapping Forward Speeds**... Flexible working range speeds work—increases output—provides high transport speeds.
- **Wide Range of Blade Positions**—Without Mechanical Adjustments . . . Saves Time in Adapting Machine to Needed Cuts.
- **Positive-Action Mechanical Controls** . . . Dependable, accurate adjustments—because they're geared . . . Easy, natural steering.
- **Ample Operating Clearances**... Quick, easy adaptation to work . . . Operator comfort, convenience, efficiency.
- **Fast, Easy, Servicing Plus World-Wide Dealer Service** . . . Saves time and money.

Make your next motor grader an **ADAMS**

Fish elevator—A $100,000 elevator for shad is a part of a $4,000,000 hydroelectric project of the Holyoke, Mass., Water Power Co. on the Connecticut River. About 500,000 tons of rock and dirt have been gouged from the river bed to increase the power-producing fall of water from 30 to 50 ft.

State highway commission—The proposed formation of a Washington state highway commission, sought in the last several biennial sessions of the state legislature, is believed to have its best chance for approval this year, with support from such organizations as the Washington Good Roads Association, Highway Research Council, Inland Auto Association, Highway Users Conference, State Grange, Motel Operators Association, Motor Transport Association and Seattle Truck Owners Association. However, Gov. Arthur B. Langlie opposes the plan, arguing that the governor should be responsible for the major portion of state government. The commission would be composed of non-salaried member appointed by the governor. It would employ the highway director with the proviso that the director would not be removed every time a new governor is elected.

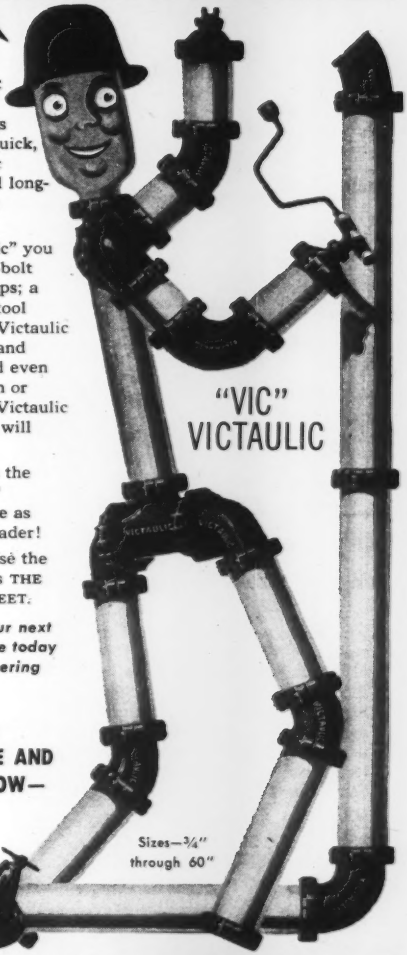
Too much hot air—In the recently rebuilt chamber of the House of Representatives at Washington stainless steel sheets in the new ceiling buckled and had to be repaired. Experts said this was caused by too much hot air, that is, from the steam heat, not the congressmen.

For diaper-set delegates—Planners of the American Water Works Association convention in Miami, Fla., Apr. 29-May 4, have neglected no one. Special arrangements have been made through the local convention bureau to provide baby sitters for those delegates who bring their youngsters along.

Rattling good story—Aldermen of Melrose, Mass., passed an ordinance barring gravel trucks from city streets when residents complained that their homes were being shaken by scores of such vehicles passing through from Woburn, Wilmington and other northern towns to the Logan International Airport being built in East Boston. In the meantime, on the other side of the continent at San Jose, Calif., an irate housewife complained that faulty construction of manholes made traffic jars. "When a truck goes by," she said, "my walls rattle, my dishes rattle, my pots and pans rattle, and I rattle."

(Continued on page 12)

STAYS RIGHT ON THE JOB!



With the COMPLETE Victaulic System you just can't go wrong. Even on the toughest piping jobs VICTAULIC Couplings, Victaulic Full-Flow Elbows, Tees and other Fittings make joining those pipe ends quick, easy, and economical. Victaulic assures complete flexibility and long-lasting dependability in piping construction.

When you join 'em up with "Vic" you save every way—a simple two-bolt design gives quick, easy hook-ups; a speed or T-wrench is the only tool needed for connections... AND Victaulic joints prevent costly blow-offs and pull-outs... stay positive locked even under extreme pressure, vacuum or strain conditions. Yes sir, with Victaulic those pipe sections and fittings will stay right on the job.

It's a cinch to groove pipe ends the Victaulic Way..."Vic-Groover" grooves 'em automatically, twice as fast as a conventional pipe threader!

Save time, work, and money! Use the COMPLETE Victaulic Line... it's THE EASIEST WAY TO MAKE ENDS MEET.

JOIN UP WITH "VIC"—make your next piping job ALL VICTAULIC—Write today for Victaulic Catalog and Engineering Manual No. 44-8D.

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27TH VICTAULIC YEAR

The easiest way to make ends meet
VICTAULIC
PIPE COUPLINGS AND FITTINGS

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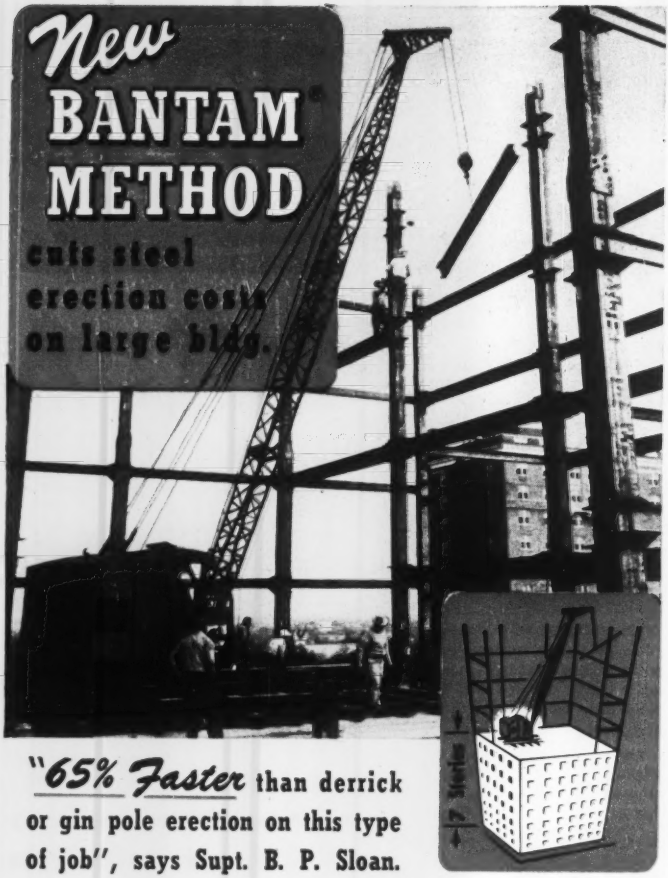


"65% Faster than derrick or gin pole erection on this type of job", says Supt. B. P. Sloan.

To save time putting up steel for the new 17-story Howell House Apartment Hotel in Atlanta, Ga., *Atlanta Steel Erectors, Inc.*, of that city, conceived the unique idea of using a Schield Bantam crane to handle all erection *from the 8th floor UP.*

Equipped with 50' boom and 8' jib, the 7100 lb. Bantam (less truck) was first hoisted to the *7th floor* by a larger crane. Maneuvering on circular steel rolls (see photo) Bantam quickly erected all beams and trusses for the *8th, 9th, 10th and 11th floors* . . . was then hoisted by hand crabs to the *11th floor*, where it completed erection *through the 17th floor.*

Rated at 5-ton capacity with power-lowering, the versatile Bantam easily handled 2454 lb. steel columns to a radius of 37 ft. . . . *erected an average of 50 tons of steel per 8 hr. day*, compared with only 30 tons per day by previous methods. You, too, can speed work, cut costs with a low-cost Bantam. Write today for free booklet. Schield Bantam Co., 201 Park Street, Waverly, Ia.

SB-C-12

SCHIELD BANTAM

for lowest cost lifting, digging, materials handling

Conscience money—The Minnesota highway department recently received a dollar bill from Rev. K. H. Leatherman of Spearfish, S. D. In a letter the clergyman said: "About 17 years ago, while visiting in Mankato and in company with a couple of other boys, I took one or two small round glass reflectors from a warning sign. The thought of this has bothered me for some time, so I am enclosing a dollar to pay for those reflectors and obtain a clear conscience, and to ask forgiveness." Kevauver influence?

The Cover:

L. F. Harza, president of the Harza Engineering Co. of Chicago, has been taming rivers and putting them to work for more than 40 years. Present day dean of American hydraulic engineers, his dams and power houses can be found in every part of this country—and in several places abroad. To make this fact plain, one need only recall the Dix River Dam in Kentucky, the Loup River power project in Nebraska, the Santee-Cooper power project in South Carolina, the power installation at Fort Peck, Norfolk and Bluestone dams and the Rio Negro development in Uruguay.

Today, although nearing 70, Mr. Harza is operating on a schedule of one month out of every four in India as chairman of the consulting board of the Damodar Valley Corp., that nation's version of our own TVA. With eight or nine dams to build and a legacy of hand labor operation to start with, Mr. Harza is setting out to mechanize the job and give India an example of American construction know-how at work.

Recent and current work includes jobs in the Philippines, El Salvador, Canada and Tacoma, Wash. And when and if the St. Lawrence power scheme gets under way, it may well be Mr. Harza's design that is used for the great Barnhart Island powerhouse—36 units of 55,000 kw each. He prepared contract plans and specifications for the Corps of Engineers in 1942.

Both a mechanical engineer (South Dakota State College) and a civil engineer (University of Wisconsin) Mr. Harza began his career in the busy office of Daniel W. Mead, but by 1912 he had established his own consulting firm. Under such able associates as Calvin Davis, Edward Fucik and Harza's son, Dick, the organization continues the hydraulic design pioneering that Mr. Harza set as its objective over four decades ago.

HEADIN' FOR MIAMI

AND THE A.W.W.A. CONVENTION

APRIL 29

TO MAY 4

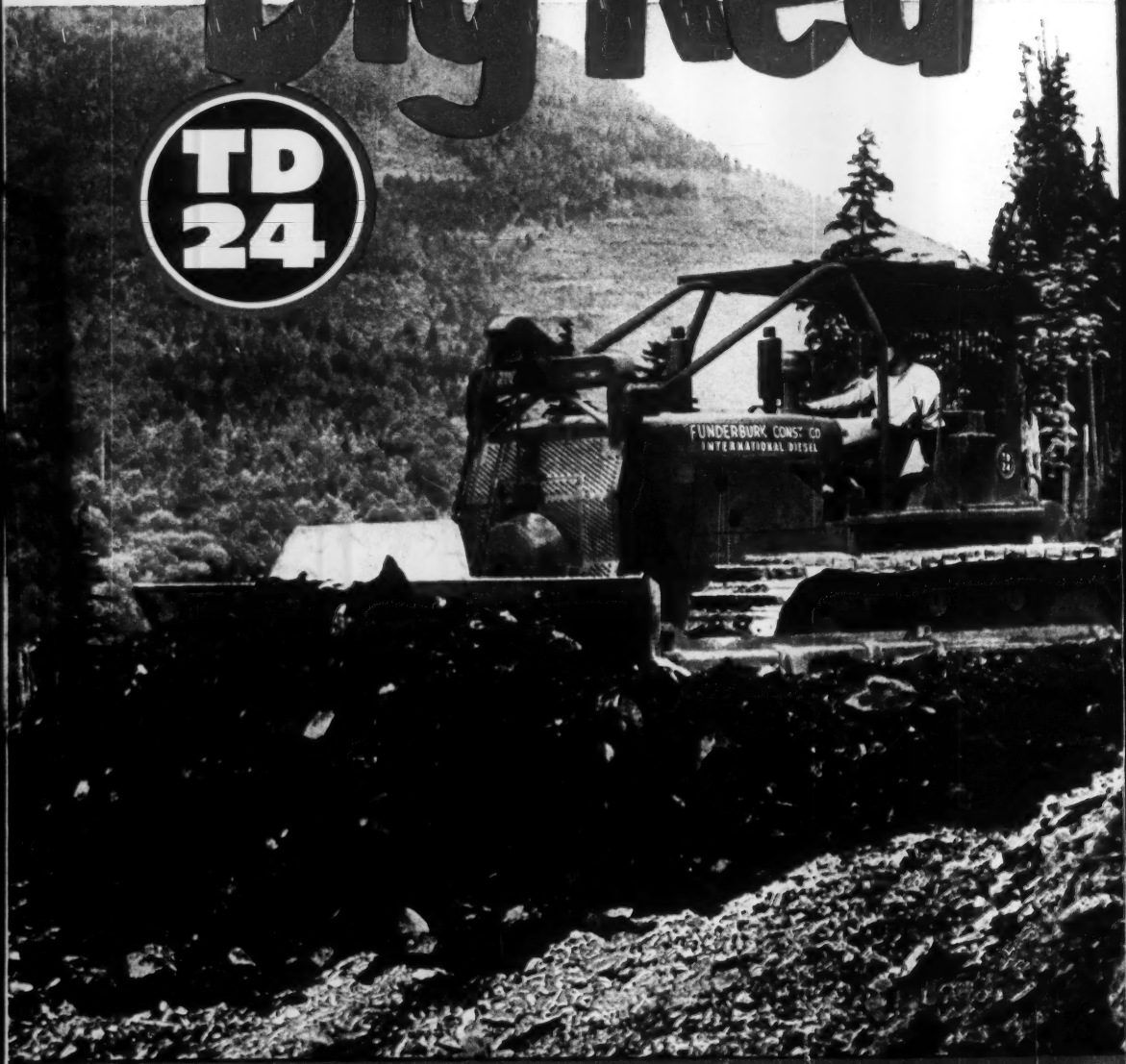
A warm welcome awaits you at the booth where R. D. Wood products will be on display. We are looking forward to showing you the famous Mathews replaceable barrel—a feature that is incorporated in the hydrants of the modern fire-fighting system of the city of Miami.

MATHEWS HYDRANTS

Made by R. D. Wood Company
Public Ledger Building, Independence Square, Philadelphia 5, Pa.
Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

"Big Red"

TD 24



Beats Blue Mountain

Read how the International TD-24 pays off, helping build mountain-top radio station.

Out near Seattle rise two 3,000-foot peaks that have suddenly become mighty important. Blue Mountain and Wheeler Mountain, a mile apart, are the bases for new antenna towers of what will be one of the most powerful radio stations ever built.

Toughest part of the construction job was building roads up the mountains. First the Funderburk Construction Company conquered Mt. Wheeler. Then they bought a new International TD-24 and started gouging out the rocky road to the top of Blue Mountain. And with the big red champ on the job, they moved faster, easier, more profitably.

"It's the TD-24's power and Planet Power steering that pay off," says Ed Funderburk. "The TD-24 stays up in the bank easier and pushes bigger bladefuls farther than any other tractor can. This means lots more material moved at the end of the day."

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THE CONSTRUCTION WEEK

REASON FOR RUSH—Engineers and contractors being pushed to start and finish new industrial plants can find a reason for hurry in the tempo of defense production—$2 billion worth a month now but scheduled to double by the end of the year. Impetus for the increase resides in the $5 billion of orders now being placed each month.

SIGNS OF OUR TIMES—A telephone call made last week to a young engineer with a New York firm confirmed what is already pretty evident concerning employment conditions. The call was routed through the office personnel department where the caller's name, company and business were demanded. Explanation: A defense against pirating of personnel.

SCRAP NEEDED—Plans for a drive for steel scrap are being readied by the National Production Authority. But remembering the World War II fiasco when every householder was importuned to turn in scrap, which didn't reach the mills until the war was over, the idea now is to confine the drive to industry, the military and perhaps to farmers.

STEEL EXPANSION SETBACK?—Lapse of an option to buy 900 acres for a one-blast-furnace steel mill near Trenton, Mich. leaves the future of the proposed Gibraltar Steel Corp. in doubt (ENR Feb. 15, p. 29). Option was held by Carlton M. Higbie, president of Higbie Manufacturing Co., of Rochester, N. Y. He is a member of the proposed Gibraltar Corp. The plant, with 5,000 Ft. frontage on the Detroit River, was to be built in 18 months. Nine-tenths of the $100,000,000 cost was to be financed by a Reconstruction Finance Corp. loan; the remainder by public subscription.

VEPCO LICENSE TO STICK—Federal Power Commission has denied the motion of Interior Secretary Oscar L. Chapman to stay the issuance of a license to Virginia Electric & Power Co. for development of the Roanoke Rapids site (ENR Apr. 12, p. 17). FPC maintains that the license was granted through its original decision and acceptance has been filed by the power company.

FLUORIDATION CHECK—Fluoridation suffered a setback this week as the New Jersey Section, American Water Works Association, cautioned State Board of Health against "physiological implications", wasted treatment. The move came right on heels of sanction of New York (ENR Apr. 5, p. 29). Look for positive action from AWWA's Miami meeting next week as a result.

ANOTHER PRESTRESSED BRIDGE—Royal Oak Township, Oakland County, Mich., is getting the next prestressed concrete bridge. It will have three spans—two end spans of 44 ft each and a middle span of 42 ft 4 in. Bridge will have machine-made, precast concrete blocks, I-beam in shape, measuring 1 ft $3\frac{5}{8}$ in by 1 ft $11\frac{3}{4}$ in by $7\frac{5}{8}$ in. Contract is for $99,220; contractor is L. A. Davidson, Lansing, Mich. Design is by Clark, Johnson and Anderson, consulting engineers, Pontiac, Mich., who have been instructed to design a second similar bridge nearby.

BRIDGE FOR BUSY RAILROAD—The New York Central Railroad announced this week that it will begin construction about May 1 of a four-track, vertical-lift bridge spanning the Harlem River in New York City. It will be built to the west of, and will replace, a present swing bridge. The railroad runs a daily average of 600 trains, carrying 180,000 passengers, over the spot.

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LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

CONSTRUCTION MAY MATCH 1950; EARLY START HELPS BUILDERS

1951 volume of construction should come close to last year's $27.7 billion—in spite of shortages and controls.

Shortages of materials, especially steel, will cut into volume later in the year. But construction got off to such a fast start in the first quarter that total expenditures for 1951 are now expected to reach $25 billion.

New controls are also expected to cut down activity eventually. But the Controlled Materials Plan, broadest of expected controls, will take some time to get going. If CMP starts operating in July, its effects won't be felt much in building until late in the third quarter. So CMP can't have much effect on construction volume for 1951 as a whole.

Even in the long run, CMP will not cut construction too heavily. Materials will still be available for essential projects. Short of war, even the less essential jobs will continue—and they may receive help in getting materials. Government people do not plan to stop any projects legitimately started.

FAST START—Booming construction activity in the first quarter points to a big total for 1951.

Construction expenditures ran at an annual rate of $31 billion (seasonally adjusted) in the first quarter. That is 3% higher than the fourth quarter of 1950, and fully 20% over a year ago.

Activity is heavy for almost every type of construction—more buildings are being built than a year ago in every category except social and recreational.

So far, shortages and slow deliveries of materials have not slowed down the rate of new construction starts. Owners and builders are still rushing to begin work ahead of further restrictions. New projects were started in larger volume than old ones were completed during the first quarter. Result has been a steady rise in the backlog of going work.

Still more work is being planned. Figures on new contracts show the rush to get started. E N-R recorded $2.5 billion in private construction awards in the first quarter—71% over a year ago. Awards for industrial construction went up 442% in the same period.

No one expects construction to hold this pace all year long. New controls may cut into starts eventually. Growing shortages of materials are likely to discourage many builders from beginning new projects, and force others to slow down work on jobs already begun.

But, regardless of future trouble with materials and controls, the flying start in the first quarter means a high level of activity for 1951.

EARLY START HELPS—Builders think that by starting now they can be sure of getting materials later—and they probably are right.

As of now, mobilization officials do not plan to shut off building supplies for going projects. That goes for non-essential as well as essential jobs—as long as a project was started legally, Washington would like to see it finished.

That means all legitimate jobs will have the right to use materials. But it does not guarantee that materials will be available when they are needed.

Delays in deliveries are bound to increase during the year for jobs that have no preference rating. Still, the builder who has already started will be much better off than the man who suddenly finds his proposed project forbidden by a new government order.

Government may even help non-rated projects held up by shortages of critical materials. Pressure for that kind of help will increase through the year. And Washington will respond to the pressure—officials want all projects finished and put to use.

NEW CONTROLS—Controls will become more important for construction as the year passes.

During May, claimant agencies will send out forms (CMP4C) to owners and builders of construction projects. Anyone who wants to have his building considered for materials allotment will fill out one of these forms.

The Controlled Materials Plan is expected to start July 1. After that date the major metals—steel, copper, aluminum—will be under direct government allocation.

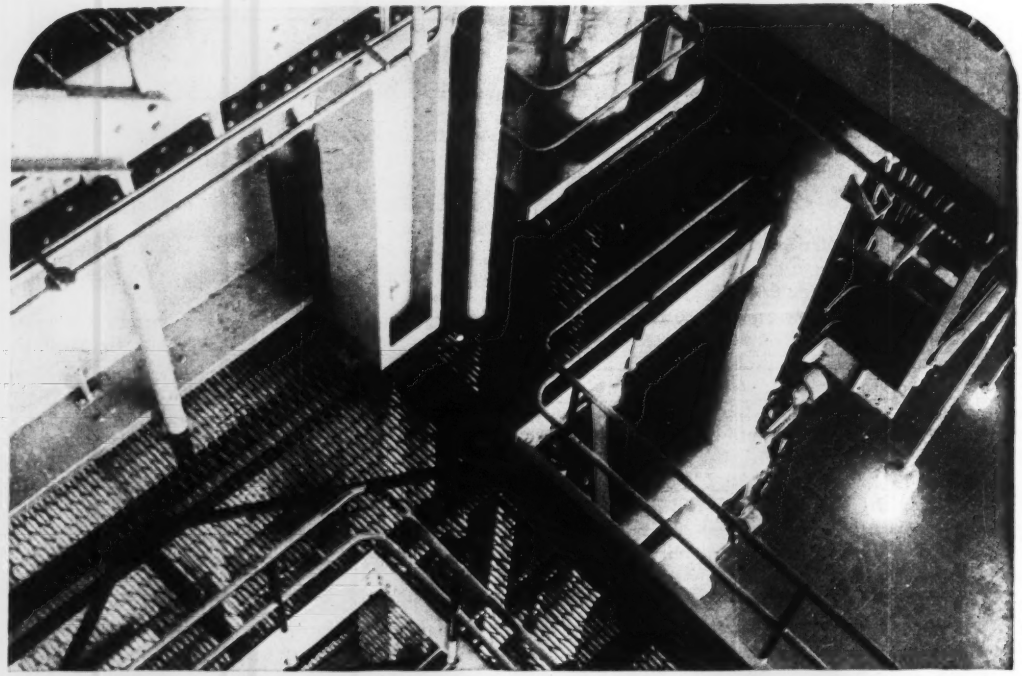
CMP will help rated projects get deliveries on schedule. Claimant agencies for essential programs—such as hospitals, schools, highways, water supply—will get quarterly allotments of critical metals. Agencies will certify projects of first importance, then assign them preference ratings for delivery of critical materials.

Getting a preference rating will not guarantee a steady supply of materials. Supplies are not big enough to go around, so agencies will not get all that they request.

But claimant agencies will get a large part of their overall materials requirements. As a result, rated construction projects will be fairly sure of a steady flow of materials.

Effects of CMP will not be too evident in the third quarter. By the fourth quarter, construction will begin to feel the impact of selective materials allocations. But the impact will come too late to cause much change in 1951 activity.

It is too early to say how CMP will affect construction in 1952. But by the end of that year, the plan will have served its purpose. At that time—barring total war—government should begin to relax controls.



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Federal toll road net unrealistic

PERIODICALLY some member of Congress presents a bill calling for a system of super-highways criss-crossing the continent. This year's first proposal comes from Senator Harley M. Kilgore of West Virginia. It varies from earlier ones chiefly in its provision for setting up a federal corporation to issue bonds to pay the cost, estimated at a modest $12 billion. Construction, operation and maintenance costs would be financed by tolls.

All these proposals ignore the fact that there is no need for such super-highways in most parts of this country, and that toll income would not support them.

As of today, state-owned toll roads are built or under construction in most of the areas where traffic is sufficiently dense to warrant them. If these roads prove profitable, it appears obvious that the states will not turn them over to a federal corporation that might use the proceeds to back less profitable toll highways in other parts of the country. If they are failures, a federal corporation would not take them over as part of an integrated national network—and in addition would have a hard time selling bonds for a federal super-highway net.

All of which seems to indicate that Senator Kilgore's super-highway network can be relegated to the visionary shelf along with the many that have gone before it.

There is, however, one aspect of the current toll highway situation—the lack of coordinated planning for the roads now being built—that does suggest a need for federal cooperation. Of the many roads now in existence, under construction or planned, only in two instances was any definite provision made in the planning for interstate connections. The New Hampshire Turnpike was designed as a continuation of the Maine Turnpike, and the eastern end of Ohio's projected toll turnpike was planned to connect with the western extension of the Pennsylvania Turnpike.

This lack of planning for toll turnpikes as units in an integrated regional or national highway network should be of concern to the federal authorities. Also, as was pointed out in a discussion of the toll-road problem in these pages last year (ENR March 30, 1950, p. 26), there is grave danger that the collection of tolls may be continued indefinitely on toll highways that prove to be profitable. That, too, should be of concern to the federal government, since it could result in a highly inequitable tax on interstate commerce.

The federal government could meet this situation in two ways. As one alternative, it could offer to let the states now operating or building toll roads use part of their federal aid highway money for these necessary connections, *provided* they make them part of an integrated system, and *provided* the highways on which those funds are used are freed of tolls just as soon as it is possible to do so.

A still better plan would be an amplification of the provision of last year's federal-aid highway act that authorizes states to use future federal-aid funds to retire bonds issued now or in the near future to finance needed highway construction. Extending that provision to cover retirement of toll-highway bonds (under the restrictions outlined above) would give the Bureau of Public Roads a persuasive force with which to work for closer integration of existing or projected toll highways into a truly national highway network.

Such a change might have the effect of fostering the construction of some additional toll highways. But in the long view it would speed the day when all toll highways would become a part of the free-road system. Also, it would be a much more realistic approach to the question of toll highways than is the Kilgore proposal or the present completely negative attitude of federal highway authorities.

Waterworks in civil defense

WATERWORKS MEN are becoming increasingly aware of their responsibilities in civil defense. And one of the responsibilities that is giving them most concern is the need to convince civil defense planners that protection of water supplies should have top priority, and that present planning should recognize that fact.

Civil defense, basically, is a local responsibility, and on that level waterworks men can do a great deal in their own behalf. But the real strength of civil defense rests in cooperative action between state, city and local agencies, or between adjoining areas. The primary need, therefore, is a well-coordinated state plan of civil defense in which major consideration is given to a continued supply of ample safe water in any eventuality. Legislative authority and adequate financial appropriations are of course, necessary to make such a plan operable.

Above all, the plan for coordination should be simple of operation. The larger communities, while perhaps the more likely targets of attack, also have the advantages of manpower and funds in developing workable defense plans. These advantages should be shared with smaller urban areas, now, during the planning stage, for the big city might well be dependent upon outlying towns for assistance in case of attack.

In the few states where legislative authority has established real coordination of defense efforts, waterworks men are to be found in the upper echelons of the setup. Where proper plans for defense, including protection of water supplies, are still lacking, waterworks men ought to take a leading part in their development.

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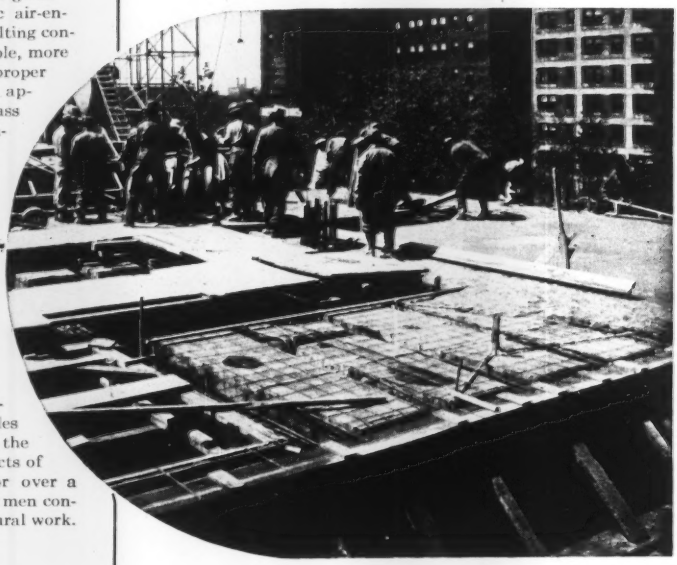

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ENGINEERING NEWS-RECORD

APRIL 26, 1951 VOL. 146 NO. 17

Builders see housing drop after pre-Reg. X backlog

National Association of Home Builders differs with government estimators; believes total starts will amount to 600,000-700,000 this year

A "fair" volume of housing starts through June, followed by a sharp drop for the last five or six months of the year, with an overall total of perhaps 600,000-700,000 starts for the year, is the prospect seen by the National Association of Home Builders.

In this, they differ sharply from government housing people, who think that the 260,000 starts for the first quarter of 1951 (ENR Apr. 19, p. 17), indicate the nation may overshoot the government's avowed 800-850,000 target.

• **Backlog**—Reviewing their industry and the work it has done so far, NAHB members say starts so far this year have been mainly on the basis of pre-Regulation X commitments, and expect that these financing agreements (made before Oct. 12) will sustain volume of starts until about July.

(Actually, this backlog is disappearing. At the end of March, about 15,000 units in one-to-four-family houses, and less than 125,000 in multi-family projects remained on the books.)

From July on, NAHB figures, the bulk of home building will be under the new credit curbs. To take account of the new regulations, the builders are shifting their operations—where possible—into lower-cost housing, and into more rental and co-op housing. So far, the builders have been surprised by the good volume of large down payment selling, but they feel they have skimmed the cream off this market, and the supply of buyers able to make larger cash payments is declining.

• **Problems**—two main problems—financing and availability of building materials—are causing builders to mark time and defer plans for future operations. Financing hinges on the credit curbs, and to a lesser extent on the increase in the government bond rate that makes mortgages less attractive to insurance companies and other large lenders.

Building materials, as yet, are not in seriously short supply—according to reports to NAHB—but scarcities are expected to show up by July or August. Labor is still no problem.

• **Effect of curbs**—FHA mortgages and VA appraisal requests show the effect of credit curbs. Appraisal requests to VA are running about half what they were in the August-October period a year ago, and are nearly 80% lower than in the middle of last summer. FHA new-home (one-to-four-family) applications were up a little in the last week of March and first week of April, but they are down 42% from the July-October (1950) average.

(The effect is apparent also in ENGINEERING NEWS-RECORD's figures, which to date show mass housing down 32% under 1950, private housing down 45% and public up 82%.

• **British Columbia, too**—Due to increasing construction costs, erection of the last 500 of 1,100 homes planned in the Fraserview development in Vancouver, B. C., has been cancelled.

• **Housing problem in reverse**—Connecticut legislators—considering a measure aimed at providing money for more low-cost housing—discovered the state has a housing problem in reverse: It has 1,400 homes unsold under a current program.

The story is this: Under former Governor Chester Bowles, the state spent about $100 million on a home ownership program under which contractors could borrow money from the state at 1½% interest, and purchasers could get state-guaranteed mortgages at 2% interest. Through this program, the state sponsored construction of about 6,000 one-family dwellings in the $8,000 to $12,000 class.

• **The switch**—Reflecting the change in emphasis from housing to industrial work, a Bureau of Labor Statistics survey of urban building showed a substantial jump in valuation for January, 1951, as compared with a year ago.

In January, 1951, new residential buildings of all types were valued at $391.2 million, a drop of 11.2% under the $440.5 million recorded in December, 1950. This was, however, a rise of 18.1% over January, 1950. However, new non-residential building for January was $265 million, a jump of 45.4% over the $182 million recorded in January, 1950.

Highway load controls: little change

Washington transportation officials now look for no major change in the system of controlling overloads on highways that has been in effect since last December. In a recent letter to the governors of all the states, James K. Knudson, head of the Defense Transportation Administration, told the governors that "unjustifiable state limitations on sizes and weights . . . cannot be tolerated in time of national emergency" (ENR March 29, p. 67).

State highway officials saw, in Mr. Knudson's letter, an attempt to substitute for the control system set up by the Defense Department late last year a weaker control system similar to the one applied during World War II when great damage was done to highways by overloads. Under the current control system the Defense Department designated 14 officials representatives of the three armed services and authorized those men—and no others—to request waivers or permits to move overweight trucks.

Top transportation policy for the emergency now is guided by Committee on Defense Transportation and Storage that began functioning early in April. This nine-man group, under Charles E. Wilson in the Office of Defense Mobilization, is headed by Delos W. Rentzel, Under-Secretary of Commerce for Transportation, as chairman.

ODM and its transportation committee will help settle the truck-weight question. DTA now is expected to adopt a system that will follow the lines already laid down by the Defense Department—probably by authorizing ICC regional offices to transmit requests to the responsible official in each state.

WSB group to have extended powers

Breaking the two-month deadlock over operation of the Wage Stabilization Board (ENR Feb. 15, p. 23), President Truman last week created a new board, with extended powers that will include settlement of labor disputes. George W. Taylor, of the University of Pennsylvania, will head it.

The decision—which follows in general suggestions privately made by labor leaders—was looked upon in Washington as a victory for the labor group. Labor walked out of the original board in mid-February.

The extended plan will increase the board's membership from 9 to 18 members, representing labor, management and the public; broaden WSB power to include settlement of labor disputes; make WSB decisions binding on parties who agree to that.

Industry—through the National Association of Manufacturers and the U. S. Chamber of Commerce—has steadily opposed such a solution, contending that (1) provisions of the Defense Act under which WSB was formed would not permit the board to settle disputes, and (2) WSB interference in disputes would complicate the extensive industry machinery already existing for settlement of such disputes under Taft-Hartley.

• **Breaking the deadlock**—However, the President's specially-appointed National Advisory Board on Mobilization Policy recommended acceptance of the extension of the WSB's membership and powers as a means of breaking the labor-management deadlock which has blocked any WSB activity since labor's walkout Feb. 16.

Mr. Truman's decision was the apparent end of two months of almost continuous negotiation involving labor leaders, NAM and the U. S. C of C, and Eric Johnston, economic stabilization boss.

The plan approved by the President is credited in Washington to Walter Reuther, auto union chief, and George Meany, AFL secretary-treasurer. It had been proposed by Johnston to the industry people more than a week ago, and rejected by them.

Hit-run vessel damages Chesapeake Bay Bridge

The unfinished Chesapeake Bay Bridge (ENR Oct. 26, 1950, p. 32) suffered its first bridge collision recently when an unidentified craft crashed against a pier and damaged it.

The Coast Guard is looking for the vessel involved in the accident, which is believed to have occurred at night. Seven of the pilings of Pier 28 were pulled out of place by what appears to have been a glancing blow, according to a report by a spokesman for the Frederick Snare Corp., one of the contractors. Each of the pilings weighs 300 lbs per ft.

Pier 28 is the anchor pier on the Eastern Shore side of the new span.

Two theories are expressed as to the type of vessel that crashed into the construction. One is that a loaded barge hit it, without the tug operators feeling the impact. The other is that no ship lighter than a freighter could have caused such extensive damage.

CAST-IN-PLACE SEWER—Constructed in sheeted trench is part of the 8,500-ft south interceptor to feed Owls Head Sewage Works, being built in Brooklyn by New York City's Dept. of Public Works (ENR Sept. 28, 1950, p. 44). Subterrane Corp. has contract for this interceptor, which varies in dia from 8 to 9 ft. L. B. Foster Co. furnished the sheet piling—and this photo.

NLRB takes union to court alleging unfair practice

A National Labor Relations Board court action at St. Louis, Mo., Thursday charged a local of the AFL International Brotherhood of Electrical Workers with unfair practices.

Filed in federal court by Harold Greenberg, acting NLRB regional director, the suit charges the union with attempting to force the Lowry Motor Co. to cease doing business with the Carondelet Neon Sign Co. The union, said NLRB, has maintained a picket line at the motor company since Dec. 27, in an attempt to get it to withdraw its order for repairs, placed earlier.

Canada debates pipelines under three applications

Three proposed pipelines are under consideration by the Canadian House of Commons.

Trans-Mountain Pipeline Corp. has been incorporated under a bill passed at Ottawa to pipe oil from Alberta to the Pacific Coast. Its export application hearing before the Dominion Board of Transport Commissioners was scheduled to open at Ottawa this week.

If the application is successful, Trans-Mountain plans to have a 715-mi pipeline through Yellowhead Pass in operation by January, 1953.

The Commons also approved incorporation of Trans-Canada Pine Lines Ltd., which plans a $250-million, 3,100-mi natural gas line from Pincher Creek in Alberta to Montreal, possibly later going to Quebec City.

Incorporation of Border Pipeline Co., which proposes an oil line route to the Pacific Northwest from Alberta via Kingsgate, Spokane, Seattle and Portland, with a stub line to Vancouver, B. C., has been stalled in the Commons by a filibuster.

Free chimney for Glendale incinerator through error

The city of Glendale, Calif., has awarded a contract for construction of a new incinerator, and has held the low bidder to his proposal—despite an estimating oversight which omitted the cost of a $38,000 chimney for the new plant.

Unlucky contractor is Nichols Engineering and Research Corp., New York. The city council turned a deaf ear to the company's request to withdraw its low bid, after a re-check showed that the chimney had not been included in the bid. Company officials finally agreed to let the bid stand—and started work.

Congress cuts interior construction, raps Reclamation Bureau policies

House Appropriations Committee cuts $39 million out of budget; asks investigation of administrative practices

Coupling its action with a cut of $39,000,000 in budget figures for the Department of the Interior, the House Appropriations Committee last week sharply criticized administrative policies of the Bureau of Reclamation, and asked the Secretary of the Interior to investigate the bureau's activities.

The committee ended its work by recommending a total of $520 million for the department in fiscal year 1952—a reduction from $559 million requested. Reclamation was cut $18,500,000, to $233.5 million—most of the cut ($16,500,000) coming out of the construction budget, which was reduced to a total of $207 million, compared to nearly $244 million available this year.

Action by the House and Senate will determine final figures.

• **Sharp criticism**—The committee took occasion to rap sharply across the knuckles of the Bureau of Reclamation, for making surveys of the route of proposed interconnections between the Bonneville and Central Valley power systems. Last year, the committee told the Bureau to spend no money on work for the proposed line.

Nevertheless, hearings on the present appropriation disclosed that the Bureau had spent $116,000 in the first six months of the current fiscal year on surveys of transmission lines north of Shasta Dam to the Oregon border. Calling the action "no mere coincidence", the committee noted that these surveys were in the very area through which the proposed tie lines would pass.

"Nonwithstanding explanations offered by representatives of the department", said the report, "the conclusion is inescapable that the Bureau of Reclamation has expended funds in direct contravention of the clearly expressed intent of Congress and positive instructions of the secretary. . . . The committee hereby requests the secretary to investigate . . . and to report promptly his findings . . . together with a report on disciplinary action taken by him. . . ."

• **Rap policies**—On administrative matters, the committee also rapped Reclamation. Nothing reports of overstaffing and inefficiencies, it said:

"Hoarding valuable personnel—including engineers and technicians whose services might much better be applied to the national defense effort—is inexcusable. . . . The reduction of construction and other Reclamation activities makes it imperative that the Bureau vigorously reduce administrative and other personnel and take firm action toward consolidating its regional and district organizations and eliminating duplications."

In line with this dictum, the group cut $500,000 off the $6,000,000 requested for general administrative expenses of the bureau, including the Washington, Denver and regional offices. (Available this year was $6,864,000 for this item, compared to $5,500,000 the committee approved.)

• **Cuts and shavings**—Interior Department estimates previously had undergone trimming by the Bureau of the Budget, to bring them into line with the President's directive to defer nonessential works. Last fall, Reclamation submitted construction estimates totaling more than $310 million. Budget cut them to less than $224 million.

Nearly $8,000,000 of the gross cut was obtained through elimination of 13 transmission lines and one water distribution system. The rest of the recommended saving was spread pretty evenly among the going projects, with only a few showing severe curtailment.

Cuts recommended included:

Missouri Basin—overall reduction of $7,000,000. Includes two severe reductions, the Cedar Bluff unit of the Smoky Hill Division cut to $500,000 from $1,310,000; and the St. Francis unit of the Upper Republican Division, cut to $134,000 from $334,000.

Central Valleys—total cut (mostly in power lines) was $4,500,000, leaving an appropriation of $34,000,000.

Alaska—road construction of $20,000,000 approved—a cut of $1,700,000 under request; Alaska Railroad, got $2,000,000 out of $2,500,000 requested; public works got $7,00,000, compared to $10,000,000 requested.

Bureau of Indian Affairs—cut $6,425,000, mostly in construction funds.

Approvals included:

National Parks Service, $11,975,000 of construction money (of which $4,200,000 goes for the Baltimore-Washington parkway); Bureau of Mines, $1,250,000 for construction; Virgin Islands public works, $1,000,000; Geological Survey, $22,000,000; Daiis Dam, $8,000,000; $10,000,000 for the Cachuma project at Santa Barbara; $19,000,000 for Colorado-Big Thompson; $22,000,000 for Hungry Horse dam, in Montana; $27,000,000 for Columbia Basin projects; $8,000,000 for Canyon Ferry Dam in Montana.

Merrill Bernard dies, climatological chief

Merrill Bernard, 59, civil engineer and chief of the Climatological and Hydrological Services of the United States Weather Bureau, died April 13 in Washington, D. C. He was the author of numerous technical papers and was the 1946 winner of the Norman Medal, presented by the American Society of Civil Engineers for advancement of science.

From 1939 to 1946, Mr. Bernard was the Weather Bureau's hydrologic director. In 1945 he went to Russia as a member of the American Meteorological mission and as one of a group of 14 American scientists selected to attend the 220th anniversary of the founding of the Russian Academy of Science. The next year, on leave from the Weather Bureau, he became special attache to the American Embassy in Moscow. He attended the Military College of South Carolina, Oklahoma A. and M., and the Universities of Wisconsin and Michigan.

At the time of his death, Mr. Bernard was president of the International Association of Hydrology and the International Union of Geodesy.

U. S. Public Health Service wants sanitary engineers

Competitive examinations for the appointment of officers as sanitary engineers in the regular commissioned corps of the United States Public Health Service will be held in various cities throughout the country on Aug. 6, 7, and 8, next. The examination will include written tests, an oral interview, and a physical examination. Completed applications must be in the Washington office by July 9. Appointments will be made in the grades of assistant and senior assistant, equivalent to Navy ranks of lieutenant (j.g.) and lieutenant, respectively.

Applicants must have a bachelor's degree in engineering, preferably civil, sanitary, or chemical, and must complete by May, 1952, a total of at least three additional years of professional training and experience. At least two years of the required experience must have been in public health or an acceptable related field.

For application forms and additional information write to: Surgeon General, United States Public Health Service, Federal Security Agency, Washington 25, D. C.

Rise in construction wage costs seen; escalator contracts lead the advance

Sixth-round boost appears certain, being forced by cost-of-living contracts approved through June 30; worker incentive cited

A sixth round of wage increases—above the 10% fifth-round already approved—now seems certain. It is being forced by the cost-of-living wage escalator contracts that Economic Stabilizer Eric Johnston has approved through June 30.

The escalators have already raised wage levels to 10% over the figure for January 15, 1950—which was to be allowed by a "catch up" wage stabilization formula. Another four or five cents will be due in June, under cost-of-living agreements.

Most contracts that follow the General Motors pattern provide for annual "improvement" increases of four cents an hour. These increases do not have the approval of the government, but Johnston has suggested they be allowed as an incentive to workers.

• **Tough to deny**—Having approved escalator contracts in effect before the wage freeze date (Jan. 25), wage stabilizers will have a tough time denying other forms of delayed increases in union contracts, or keeping other unions from achieving wage parity.

Unless Congress puts a heavy foot on the brakes when it overhauls the Defense Production Act next month, a continued—though perhaps regulated—rise in wage costs can be expected.

An example of the kind of thing Johnston will have to rule on is coming up at Rochester, N. Y., where a majority of building trades unions agreed to sign a joint letter with the Builders Exchange of Rochester, seeking approval of increases granted last summer.

Many of the building trades unions signed two-year wage contracts at Rochester, calling for automatic increases this year—and in several cases these increases are more than those now permitted by federal regulation for the industry.

• **Other developments**—Meanwhile, the labor pot continued to simmer right along. Ohio construction workers got a 10% wage increase, following an agreement with the Ohio Contractors Assn.; carpenters at Sharon, Pa., returned to work after a two-day strike over refusal of contractors to boost wages from $2.25 to $2.50 an hour (they will abide by a WSB decision); the Alliance, Ohio, city council agreed to grant a five-cent per hour boost to all hourly workers of the street department. Construction workers in the Boston area are slated to receive April raises in a general wage-increase movement in the metropolitan district.

GRANE HOIST—Tunnel construction for a Niagara Falls, N. Y., water intake is nearly complete. Shaft, located at the end of a new mole extending into the Niagara River from Buckhorn Island, has a muck skip handled by a crawler crane. The 8½-ft tunnel is 3,000 ft long, will cost $2,757,000. Intended to bring in water from a less-polluted offshore point, it is an extension of the present tunnel and is expected to be completed next year, including a pumping station and water treatment plant. Leo Butler Co., Silver Spring, Md., is tunnel contractor. Greeley and Hansen Co., Chicago, is consulting engineer. (Aremac photo)

• **Engineers leaving**—The Indiana State Highway Department has lost some 73 engineers to better-paying jobs, according to Samuel C. Hadden, chairman of the Highway Commission.

Although the state's budget committee approved salary increases, effective April 1, from $10 to $80 a month, eight new resignations were submitted in mid-April.

Under the new Indiana salary schedule for engineers, pay starts at $3,600 a year and the maximum is $7,200.

Court grants Brown & Root injunction against unions

Brown & Root, Inc., Houston, Texas, engineers and contractors, last week won a round of an all-out battle with construction labor unions, which have carried on a two-year fight against the firm's open shop policy. (ENR Oct. 26, 1950, p. 24). Judge Charles O. Betts, of the Texas District Court, on April 16 granted the construction firm a temporary injunction against 90 American Federation of Labor organizations, prohibiting the unions from "picketing and otherwise harassing" Brown & Root. The court did not, however, grant damages totalling $98,450, also sought.

Nat Wells of Dallas, attorney for the Texas Federation of Labor, immediately filed notice of appeal.

Probably the strongest attack against union labor ever made in Texas, the suit was filed by Brown & Root October 2, 1950. It charged that the unions were violating the state's labor and anti-trust laws, by trying to force the organization to accept a closed-shop policy.

It charged conspiracy toward this end dating back to May 1, 1949. According to the petition, the unions started to picket its place of business in Houston on Jan. 3, 1950, and at the same time threw picket lines around six of its job sites in Houston, Austin and Beaumont.

Additionally, said Brown & Root, 21 material supply firms in Houston and elsewhere were picketed or threatened with picketing to force them to stop selling supplies to the company. Twenty-four other firms, it was claimed, were threatened with listing as "unfair" and with other forms of economic pressure to force them to boycott the construction company.

Further, said the petition, "on each and every job awarded in whole or in part to Brown & Root since May 1, 1949, defendants have threatened to place and maintain pickets at job sites."

Brown & Root has never had anything even resembling a union organization—not even in a shipyard it operated during World War II.

CONSTRUCTION BUSINESS

N. Y. builders protected by termination clause

New York City's Board of Education last week had taken an industry-approved step aimed at protection of contractors working on school buildings, in the event of material or labor shortages.

The board approved a new termination clause that permits ending of a contract on proper determination that materials cannot be obtained in time and in quantity to keep work progressing. At the same time, in a separate resolution, the board determined to pay 90% of the cost of materials purchased and stored in advance. Previously, the board paid 80%.

The new termination clause will apply to contractors engaged in new school construction, modernization, maintenance, repairs, supplies and equipment. In cases where more than one contractor is involved, the board may elect to terminate all contracts.

A large factor in the changes was the work of the City Contracts Committee, representing the building construction industry.

The termination clause reads in part:

"Par. 1. If, by reason of a national emergency or by reason of orders, regulations or directions of governmental authority resulting from such emergency, the Contractor is unable to obtain sufficient equipment, materials or supplies, or a sufficient supply of labor to enable him to properly progress the Work to timely completion, he may give written notice to the Superintendent (of schools) . . .

"Par. 3. If the Superintendent, after due investigation, shall determine that the Contractor, for any of the said reasons, is unable to properly progress the Work to timely completion, he shall so recommend to the Board of Education. Upon approval of this recommendation . . . and upon receipt by the Contractor of written notice from the secretary of the board's determination, the Contractor may elect to terminate the contract by giving the secretary written notice . . .

"Par. 4c. All special equipment machinery, materials and supplies on hand and usable only for the purpose of incorporation in the Work, and all materials specially fabricated for the Work and conforming to specifications . . . shall . . . be bought by the board at prices actually paid therefore . . . including any sales taxes and freight and delivery charges . . ."

Money costs rising fast for public borrowers

Public works officials seeking to raise funds via bond issues last week were made aware of a significant change in the bond market:

In a little more than two months time, the market for tax-exempt bonds has recovered most of the yield lost following the advent of war in Korea and rising income taxes. The yield rates on these bonds have risen from a low point of 1.61% in February, 1951, to 2.09% reported last week by Standard & Poors. (It is interesting to note that the 2.09% figure is the same as in July, 1950, when the yield began to drop.)

Unsettled conditions in the bond market cloud the picture, but it appears that certain factors will bring a continuing rise in money costs: Large inventories of bonds in the hands of dealers; a cautious, low-volume market for municipal bonds, and a general rise in bond yields.

The rise in U. S. government bond yields, now that Federal Reserve Board-Treasury agreements have "unpegged" the market in this item, is a significant factor. FRB, which had been supporting U. S. bonds now has pulled itself partially out of the market, allowing yields to rise.

Result of this action has been a "wait and see" attitude on the part of large institutional bond buyers.

NPA regroups to handle complicated CMP program

With the advent of the Controlled Materials Plan (ENR Apr. 19, p. 23) the National Production Authority has regrouped its organization to handle details of the program.

Result: The business divisions have been grouped into four bureaus —metals and minerals; chemical, rubber and forest products; textiles leather and specialty equipment, and industrial and agricultural equipment.

Business briefs . . .

• **Approve new bonds**—Voters of Columbus and Franklin counties, Ohio, have approved bond issues totalling $23,238,000 for expressways, schools and airport improvements, which, with federal aid, will mean $39,000,000 in construction work, officials said. Biggest share of the four issues approved—$11,500,000—will go for school construction.

• **Close bidding**—Military and public works projects in Alaska and eastern Washington state drew surprisingly low and close bidding. The Corps of Engineers got four bids on a housing project at Ladd and Eielson Air Force bases—and all four were under the $5,438,963 estimate, with low bid (from J. H. Pomeroy & Co., Inc., San Francisco) of $4,793,966. The Washington State Highway Department got a low bid (from Manson Engineering Co., Seattle) of $321,042 for a bridge job near Port Townsend. Next bid was only $203 higher.

• **Roofing shipments down**—Shipments of nearly all types of asphalt and tar roofing products declined moderately from January to February, said the Department of Commerce. Asphalt roofing went down 17%, to 4,354,384 squares; asphalt siding dropped 16%, to 170,060 squares; saturated felts dropped 15%, to 61,158 tons.

• **European cement**—Western Europe, said the European Cooperation Administration, can help out the current U. S. cement shortage. ECA made a survey, determined that Belgium, Denmark, Italy, western Germany, Norway and Sweden could ship as much as 20,000 metric tons a month to the U. S.

• **Copper order due**—A forthcoming NPA order—revealed to industry representatives last week—will limit the use of copper in plumbing fixtures by permitting manufacture of repair parts only at the rate in the first six months of 1950. Only exceptions would be fixtures for chemical plants, laboratories, hospitals where no substitute is available.

• **Metal construction**—Plans for expansion in the metal and mineral industry will call for some huge construction programs. The Defense Minerals Administration told a Congressional committee that between $65 and $98,000,000 would be spent for a Cooper Range Co. plant near White Pine, Michigan.

• **Lumber shipments drop**—Lumber shipments from 449 mills were 7.9% above production; new orders were 6.2% above production for the week ending April 7, according to the National Lumber Manufacturers Association. These figures represent a drop in both categories under the week ending March 31.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 76, went to press.)

Housing—Boston Housing Authority, Boston, plans housing project to cost $7,250,000 in Boston. Plans will be made by Arland A. Dirlan, Boston architect. Plans are also underway for a $10,250,000 housing project in Roxbury, with plans by Thomas F. McDonough, Boston.

Paper mill—C. C. Mengel Co., Louisville, Ky., plans a $10,000,000 paper mill in Jessup, Ga.

Cellulose factory—Eloy S. Ballina & Associated, Chihuahua City, Mexico, plans $17,350,000 cellulose factory in Chihuahua.

Apartments—Ester Ellman c/o Joseph Schafran, architect, New York, N. Y. will construct an apartment in Hollis, N. Y. by separate contracts estimated cost is $5,390,000.

Gates and appurtenances—Willamcett Iron & Steel Co., Portland, Ore., was low bidder at $4,570,460 for furnishing and installing intake gates and appurtenances for McNary Dam, Oregon, when the U. S. Engineers, Walla Walla, Wash., opened bids April 17.

Schools—Arlington Public Schools, Arlington County, voted $4,875,000 for school construction. Work will include a junior high school for which Rhees Burkett, Washington, D. C. is preparing plans, and several elementary school additions, with plans underway by McLeod & Ferrara, Washington, D. C.

Apartment – Briarwood Apartments, Briarwood, N. Y. will construct a garden apartment in Briarwood, N. Y., by own forces. Cost will be about $4,000,000. Joseph Schafran, New York, N. Y. is architect.

Quarters—Patti MacDonald Construction Co., Kansas City, Mo., was low bidder at $2,709,400 when bids were opened April 17, by the U. S. Engineers, Seattle, Wash., for quarters at Fort Richardson, Alaska.

Shopping center—Owner c/o Nathaniel Hanlen, Nozton, plans shopping center in East Arlington, Mass. Estimated cost is $2,500,000. Sumner Schein, Boston, is architect.

Hospital—St. Luke's Hospital, San Francisco, Calif., plans addition to St. Luke's Hospital, San Francisco. Cost will be about $2,300,000. Sidmore, Owings & Merrill, San Francisco, are architects.

Hospital – Permanente Foundation, San Francisco, Calif., plans are being prepared by Wulff & Phillips, Portland, Ore., for a hospital in San Francisco, Calif., to cost $2,300,000.

Hospital—Herman & Kiefer Hospital, Detroit, Mich., plans a brick and steel tuberculosis hospital addition to cost $2,000,000.

Apartment—200 East End Ave. Corp. of Great Neck, N. Y., will construct a 16 story apartment at East End Ave. from 89 to 90th Streets, New York, N. Y., by separate contracts. Estimated cost is $2,112,000.

Hospital—General Hospital of Los Angeles, Calif., plans an 8-story communicable diseases unit to cost $3,500,000. Williams & Wilson of Los Angeles, Calif., are the architects.

Housing – Providence Housing Authority, Providence, R. I., plans a 632 family low income housing project in Providence to cost an estimated $6,000,000. Creer, Kent, Mather, Cruise & Aldrich of Providence are architects.

Factory – Shellmar Products Corp., Mount Vernon, Ohio, plans to enlarge its factory facilities at Mount Vernon. Estimated cost is $2,000,000.

Housing—Woner, Hlosser Building Co. of Topeka, Kan., will build a $2,000,000 co-operative type housing project in Topeka.

Warehouse – Montgovery Construction Co. of Grove City, Pa., was awarded the contract for 5 warehouses in Warren, Ohio. Bids were opened March 27 by the U. S. Govt., General Services Administration, in Washington. The Pennsylvania Co. bid was $1,895,000.

Housing—Pittsburgh Housing Authority, Pittsburgh, Pa., plans a housing project for Pittsburgh to cost $5,000,000. Architects are Marks, Fisher & Simboli of Pittsburgh.

Plant—Stone & Webster Engineering Corp. of Boston, Mass., were awarded the contract for a steam electric plant to cost an estimated $1,700,000. The plant will be built in Norfolk, Va., for the Virginia Electric & Power Co. of Richmond, Va.

Bridge—J. B. Clardy Construction Co., Fort Worth, Texas, was low bidder at $1,125,936 when bids were opened April 16, by Dallas County at Dallas, Tex., for a steel concrete bridge.

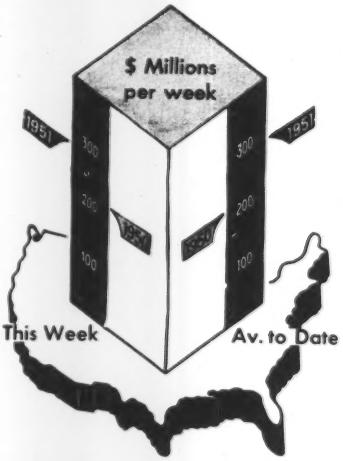
COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100	1913	1926	1949
Constr. Cost. Apr. '51	538.69	258.95	112.93
Bldg. Cost. . . Apr. '51	398.78	215.57	113.36
Volume . . . . Mar. '51	558	227	161

Activity This Week

As reported to ENR (in millions of dollars)



Amount of contracts let

Week of Apr. 26 '51	This Week	Cumulative 17 wks. 1951	1950	% chge
Federal	$93.6	$763.3	$470.9	+62
State & Mun.	62.1	1,176.5	995.9	+18
Total Public	$155.7	$1,939.8	$1,466.8	+32
Total Private	129.0	3,058.0	2,013.4	+52
U. S. Total	$284.7	$4,997.8	$3,480.2	+44

Contracts by type of work

	This Week	Cumulative 17 wks. 1951	1950	% chge
Waterworks .	$1.9	$79.5	$83.6	−5
Sewerage . . .	7.0	105.1	74.5	+41
Bridges	3.6	90.1	105.8	−15
Highways . . .	23.2	314.3	337.4	−7
Earthwork, Waterways .	81.3	205.8	128.7	+60
Buildings:				
Public	28.9	800.9	552.9	+45
Housg., pub.	1.2	183.6	67.8	+171
Housg., priv.	49.2	648.2	1,169.7	−45
Commercial .	6.5	218.8	323.6	−32
Industrial . .	65.7	1,819.4	354.6	+413
Unclassified .	14.2	532.1	281.6	+89

NOTE: Minimum size projects included are: Waterworks and waterway projects, $1,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $200,000.

New capital for construction

	Cumulative 17 wks. 1951	1950	% chge
Corporate Securities	$669.8	$595.2	+13
Fed. loans, Priv. Constr.	0	0	0
State and Mun.:			
Excl. housing . . .	699.4	612.8	+14
Housing	267.0	198.8	+34
Fed. Aid, non-fed. constr.	73.4	0	0
Total Non-Federal .	$1,709.6	$1,406.8	+22
FEDERAL	2,602.5	0	0
Total Capital	$4,312.1	$1,406.8	+207

Anti-pollution programs get continued support

Pennsylvania's Schuylkill River silt-removal nearly completed; Wisconsin and Illinois order more projects

Pennsylvania's Forests and Waters Secretary, M. F. Draemel, announces that the multi-million-dollar job of cleaning up the Schuylkill River between Kernsville and Norristown (ENR Mar. 10, 1949, p. 21) is 97% complete.

The operation, which included the removal of 16,438,000 cu yd of silt from the stream, has cost the state $27,533,277 to date.

Gov. John S. Fine has asked the 1951 legislature to appropriate $1,165,000 to complete the project.

In addition, the federal government is committed to clean up the silt-choked portion of the Schuylkill between Norristown and Philadelphia.

• **Wisconsin River order**—In a statewide campaign to clear its streams, Wisconsin's state committee on stream pollution ordered the cleanup of the upper Wisconsin River.

May 31, 1952, is the date set for submission of plans for the treatment of sulphite liquors and installation of fiber-recovery equipment by paper plants located in the area. Construction must be completed one year later.

• **Illinois sewage plans**—Permits for the construction of nine new sewage projects were issued recently by the sanitary water board of Illinois.

Work involving sewage treatment plants and water and sewer system improvements will be done at Joliet, Grayslake, Tinley Park State Hospital, Elburn, East Dubuque, Rochelle, Ottawa, Sparta and East Dundee.

Water district expands to aid lowering supply

Voters in Orange County, Calif., have approved formation of an Orange County Municipal Water District which will seek to join the Metropolitan Water District of Southern California.

The Municipal Water District will include territory of the Orange County Water District, as well as some fringe areas. Included are six unincorporated cities, among them Orange and Huntington Beach.

The move for annexation—which may come some time next fall—comes as a USGS report shows the saline front now has reached 5 miles inland from the coast in Orange County—2½ miles farther than in 1941. The saline area now has polluted municipal and private wells in an area estimated at from 3,300 to 4,000 acres.

Since 1949 the Orange County Water District has been purchasing water from the Metropolitan system. In the past two years it has purchased some 30,000 acre-ft of water, but still finds on latest estimate that its subterranean basin is overdrawn by 300,000 acre-ft, with the water level lowering steadily.

Proposals are now before the county district to buy an additional 25,000 acre-ft to be delivered into the Santa Ana River 20 miles upstream from the Orange County line where the Metropolitan Aqueduct, carrying Colorado River water, crosses the Santa Ana. Water released will flow downstream to a sinking area some 5 miles long.

W. D. Miller, secretary of the Orange County Water District, points to the 60-year rainfall average and to the county's population growth as reasons for the subterranean overdraft.

A. E. Berry is new president of Amer. Water Works Assn.

Down in Miami, Fla., Albert E. Berry will become AWWA's president for 1951-52, succeeding W. Victor Weir. He is director of the sanitary engineering division, Department of Health of Ontario—and has been since 1926.

Active in AWWA since 1920, Mr. Berry was its Canadian director, 1937-40, and served as vice-president during the past year. He is also a past-president of the Federation of Sewage and Industrial Wastes Associations, 1944-45. His Ph.D. in sanitary engineering was earned at the University of Toronto in 1926.

Charles H. Capen, chief engineer, North Jersey District Water Supply Commission, is to be AWWA's new vice-president. William W. Brush, editor of "Water Works Engineering" will retain his previous office of treasurer.

These officers-elect will take office at the close of the 71st Annual Conference in Miami next week.

Bill would cut amortizing advantage

One result of the promised close scrutiny of Defense Act provisions for rapid amortization on new construction (ENR Apr. 19, p. 27) was contained in a bill in the House of Representatives last week.

Introduced by Rep. Eberharter (D., Pa.), the new measure would forbid the inclusion of fast amortization in calculation of costs when contracts are renegotiated.

Under the existing law, companies that receive "certificates of necessity" authorizing them to write off the costs of new plants and facilities in five years (for tax purposes), can also use the accelerated amortization as a cost in figuring up their expenses for renegotiation.

This provision swells calculated expenses. If they could use only normal depreciation as a cost item, their operating costs would be held down and more profits would be subject to recapture under renegotiation.

• **Normal depreciation for renegotiation**—Eberharter's bill would require the use of normal long-term depreciation as an operating cost for renegotiation. The bill takes the form of an amendment to existing law.

Observers commented that during World War II accelerated amortization was allowed as a cost in renegotiation. "But," said Eberharter, "it is my view that the subsidies defense producers are getting under existing tax laws are enough to get them to do the job. If the same write-off is allowed as a cost before recapture of excessive profits . . . the subsidy will in effect be doubled and redoubled."

D. C. and N. C. authorize slum clearance projects

The inauguration of planning work on three new Washington, D. C., slum clearance projects coincides with a North Carolina legislative enactment authorizing cities of over 25,000 population to create redevelopment commissions for the clearing of slum areas.

In the Capital, the District Redevelopment Land Agency has announced that three projects are to be selected from so-called "problem areas." There would be one each in northwest, southwest and southeast Washington.

After area boundaries are set, and agreed upon by the District Commissioners, redevelopment plans will be drafted for consideration at a public hearing.

In North Carolina federal funds are to be employed for clearance purposes.

East has big bridge, road plans

Linking of the New Jersey and Pennsylvania Turnpikes by a bridge across the Delaware River near Bordentown, N. J., is in prospect. The estimated cost, including approach routes, is put at $100 million. Pennsylvania would pay $84 million and New Jersey $16 million of the cost in one of the major bridge and road plans under discussion in eastern states last week.

Plans were worked out at a conference among state representatives.

The proposed bridge is estimated to cost $12 million, with the cost being split 50:50 between New Jersey and Pennsylvania. New Jersey would have to spend an additional $10 million to construct a spur road from its turnpike to the bridge.

Pennsylvania would have to spend an estimated $78 million to extend its turnpike from the present terminus at King of Prussia to the bridge—a distance of 30 miles.

• **Cross-Ohio freeway**—Plans were launched last week for a $300-million Cleveland-Columbus-Cincinnati freeway by the Ohio State Highway Department. This artery will connect directly with the heart of these major cities in its diagonal course across the state.

The Cleveland-Columbus section is to receive attention first. No difficulties on priorities are foreseen by the state's highway planning and programming engineer, Norman M. Wilke. He said, "This is to be part of the National System of Interstate Highways . . . . and is part of the strategic network."

Surveys are being initiated to produce the engineering report that will determine a half-mile-wide band where right of way will be laid out.

• **Novel turnpike idea**—Ohio highway engineers were presented with a plan to construct the state's new east-west turnpike so that westbound traffic would flow over the southerly lanes and eastbound vehicles would move over the northerly lanes of the divided roadway—reversing the traffic flow that is now used universally throughout the nation.

The proposal was made at the Ohio Highway Engineering Conference at the Ohio State Museum recently, by Hershel H. Allen, of the J. E. Greiner Co., Baltimore. His firm served as consulting engineer for the Pennsylvania Turnpike Commission and is now employed to prepare plans for the Ohio toll road.

Inside travel lanes would be separated by a 40-ft median divider, each with a 10-ft shoulder on the inside—providing a separation distance between opposing traffic of 60 ft.

Large plans for private industrial construction

Two major projects for new construction announced by private industry last week were plans of the General Electric Co. and the Long Island Lighting Co. (of New York).

Long Island Lighting will spend $35 million for a new steam-electric generating station adjacent to an existing station on Hempstead Harbor, on Long Island's North Shore. Announcement of construction plans followed clearing of title to a four-acre site purchased by the company from the State of New York some years ago.

The property—largely under water—was in question because the state's title had become confused with that of the Town of Hempstead. Town officials approved a clear title.

General Electric—which has already spent $425 million on new plant and facilities over the past five years—told its stockholders at the annual meeting that it would spend another $350 million under a new four-year expansion program. G.E. officials reported that the company's $30 million turbine manufacturing facilities, for example, are already inadequate.

Ala., N. C. establish road policies

The two southern states of Alabama and North Carolina have taken steps to meet the need of ever-increasing demands upon their highway systems—particularly with a view toward adequate financing.

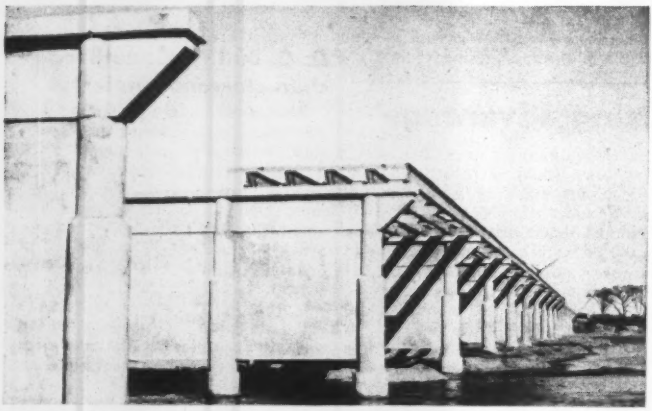
Alabama's highway director, W. G. Pruett, has adopted a policy of paving only those roadways which feed into the main highway system. It has been charged that in previous years large sums were spent in paving areas which did not connect with the highway system.

In addition, Pruett created a procurement and salvage board to examine any expenditure over $1,000.

The North Carolina Legislature has enacted a law providing for the establishment of a state turnpike authority, with power to issue revenue bonds and to construct toll roads and bridges across the state which would connect with turnpikes of other states.

Private investors would be brought into the picture to finance the construction without involving the credit of the state. When free of debts, the roads and bridges would be turned over to the state.

The legislature also voted to leave with the state's highway commission the matter of setting weight and speed limits for highways. Decisions were to be made from an engineering viewpoint for the sections in question. Particular emphasis here was placed upon proper care of the rural roads, built as "farm to market" highways under a $200-million bond issue.



STEEL ADVANCES—Contractor M. E. Gillioz is laying steel across the 23 concrete piers of Oklahoma's $1,135,898 bridge across the Arkansas River at Tulsa for Highway 66. Each pier consists of three columns supported on individual footings—supporting a cross beam which makes the bridge seat and web. There is a solid web between columns, separated from the beam web by one-inch expansion material to permit independent action. Maximum height of pier from bottom of footing to bridge seat is 56 ft, 5 in.; width of pier seat is 63 ft.

McNary group wins contract for final phase on dam

The contract for the third and final phase of construction on McNary Dam, on the Columbia River in Oregon (ENR June 29, 1950, p. 29), was awarded to McNary Dam Contractors, the present operating contractors on the project.

A low bid of $58,416,490 did the trick. This compares to an engineering estimate of $55,058,360 for the job, but was well within the 25% limitation imposed by Corps of Engineers procedure.

McNary Dam Contractors is a joint venture composed of: Guy F. Atkinson Co., Portland; Ostrander Construction Co., Portland, and J. A. Jones Construction Co., Charlotte, N. C. This combination had the two previous major contracts.

The only other bid submitted—for $61,972,032—was given by Columbia Contractors, of Boise, Idaho—a group of 10 construction firms, including: Morrison-Knudsen, of Boise; Henry J. Kaiser, Oakland, Calif.; Peter Kiewit Sons Const. Co., Omaha; Kaiser Industries, Inc., Oakland; Brown & Root Inc., Houston; General Construction Co., Seattle; The Shea Company, Alhambra, Calif.; Walsh Construction Co., San Francisco; Macco Corp., Paramount, Calif., and the Puget Sound Bridge and Dredging Co., Seattle.

The contract calls for construction of the remaining portion of the spillway, powerhouse, abutments and appurtenant structures; also calls for about 100 million cu yd of fill.

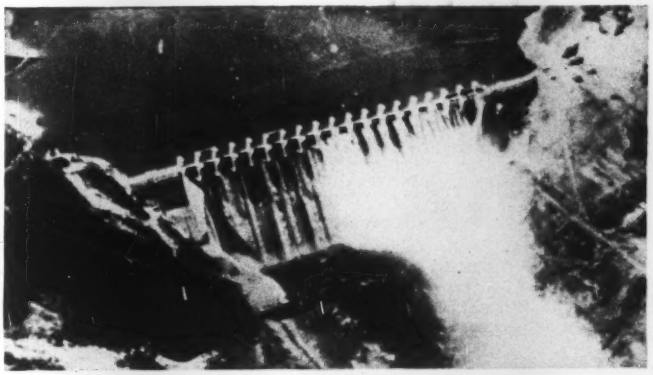
One tunnel makes record, another delayed by fire

Workers of the Utah Construction Co., driving the 7,000-ft, $2,500,000 haulage tunnel at Kennecott Copper Co.'s Bingham Canyon mine in Utah, may have set a world's record for footage in a hard-rock railroad tunnel.

According to work superintendent Paul Guinn, the steel-supported tunnel was advanced 805-ft in 27 days, as of April 8.

The tunnel is being driven from the Kennecott ore haulage railroad mainline in Bingham Canyon to a point 50 ft below the present floor of the open pit mine. The bore is standard railroad size, measuring 21 ft wide and 25 ft high. It will give access to the 5,840-ft mine level, whereas haulage at present is handled through a tunnel at the 6,040-ft level.

The new bore will be four mine levels below the current mine floor when placed in operation at the scheduled completion time in mid-1852.



GOAL FOR THE ALLIES—United Nations troops on Korea's central front have been battling against fierce Communist resistance in their drive toward the Hwachon Reservoir. This air view looks down upon the spillway and dam, third largest in Korea and one of the principal pre-war sources of hydroelectric power for Seoul and other parts of South Korea. Reds recently opened the dam's flood gates in an unsuccessful attempt to stop the Allied drive which triumphed last week. (Wide World photo)

Claim Mo. flow OK for Pick-Sloan plan

There will be enough regulated water in the Missouri River when the Pick-Sloan program is completed to effect all (ENR, May 16, '46, v. p. 766) intended purposes. This was the report made last week for the Missouri Basin Inter-Agency Committee to the often expressed doubt that the river's flow will support comprehensive basin-wide development.

A subcommittee submitted a detailed report to the Inter-Agency group in session at Yankton, S. D. Conclusions of the report are based on a six-month study of hydrology statistics recorded over the past 52 years.

Findings include these:

Average annual flow in the Missouri at Sioux City, Iowa, is 24,552,000 acre-ft; average annual water requirements of the comprehensive plan, as it affects flows at this point, would range from 16,530,000 acre-ft in 1960 to 22,746,000 acre-ft in the year 2000.

Average annual flow in the lower Missouri River is estimated in the report to be 41,000,000 acre-ft at Kansas City and 59,000,000 acre-ft at Hermann, Mo.—some 90 miles upstream from the mouth.

• Tolerable shortages maybe—The subcommittee reported that another severe drought like that of the 1930's might mean irrigation shortages on some tributaries and some shortening of navigable channels. But, in the opinion of the subcommittee, such a drought (it happened only once in the past 75 years) will not interrupt all the basic purposes of the program, and shortages will have to be tolerated.

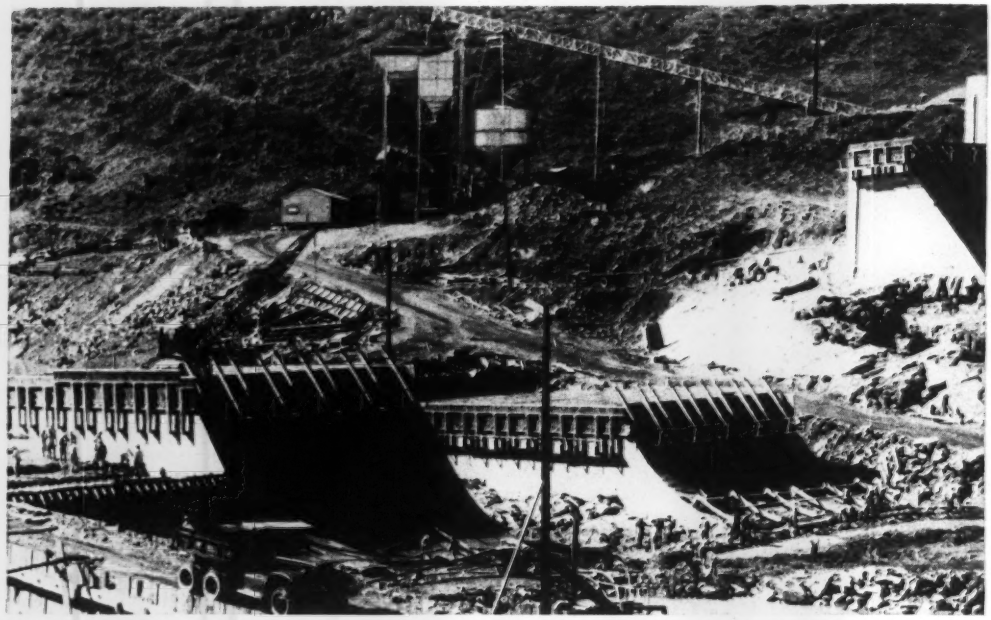
On the main stream, Sioux City was taken as control point for studies since below that point flow increases faster than demand, according to earlier research. The report recognizes the importance of keeping flow above the minimum necessary for industrial use and stream sanitation.

In figuring demand on the river's flow up to the year 2000, the subcommittee was guided by estimates from all agencies concerned. Participants in the studies included representatives of the Corps of Engineers, Bureau of Reclamation, Department of Agriculture, Geological Survey, Public Health Service, Federal Power Commission, Weather Bureau, the lower basin states and the upper basin states. Wendell E. Johnson of the Corps of Engineers was chairman of the subcommittee.

• Delay by fire—Work on Pacific Gas & Electric Co.'s tunnel at the Bear River Dam project was delayed for 10 days this month by a $100,000 fire.

The machine and electric shops of the Walsh Construction Co. on the site were destroyed in a fire believed to have been caused by an exploded acetylene tank.

Work on the tunnel has been resumed and a rock quarry started to provide material for the 230-ft high rock-fill dam. Design of the $11,000,000 dam follows closely the PG&E Salt Springs Dam built in 1931 and said to be the largest rock fill dam in existence (ENR Jan. 16, 1930, p. 92). PG&E has been a leader in rock-fill dam design.



LOIZA DAM—Steel forms, modern concrete plant belie conditions under which early phases of engineering had to be done.

What's backward-area engineering like?

Building waterworks in Puerto Rico

Arthur J. Fox Jr.
Assistant Editor

ENGINEERING in underdeveloped areas means starting from scratch. It means doing lots of groundwork—some guesswork. There are slim files of past records, if any, on which to base planning, little earlier experience by which to profit. Design criteria must be set, standards established.

Such has been the experience of Buck, Seifert & Jost, New York consulting firm, in its work to supply Puerto Rico with water. As consultant to the insular government's Aqueduct and Sewer Authority, the firm is responsible for making order out of disorder—helping the authority decide how best to develop water supplies to satisfy the fast growing needs of a soaring population and a stimulated industrialization (ENR Feb. 15, p 32).

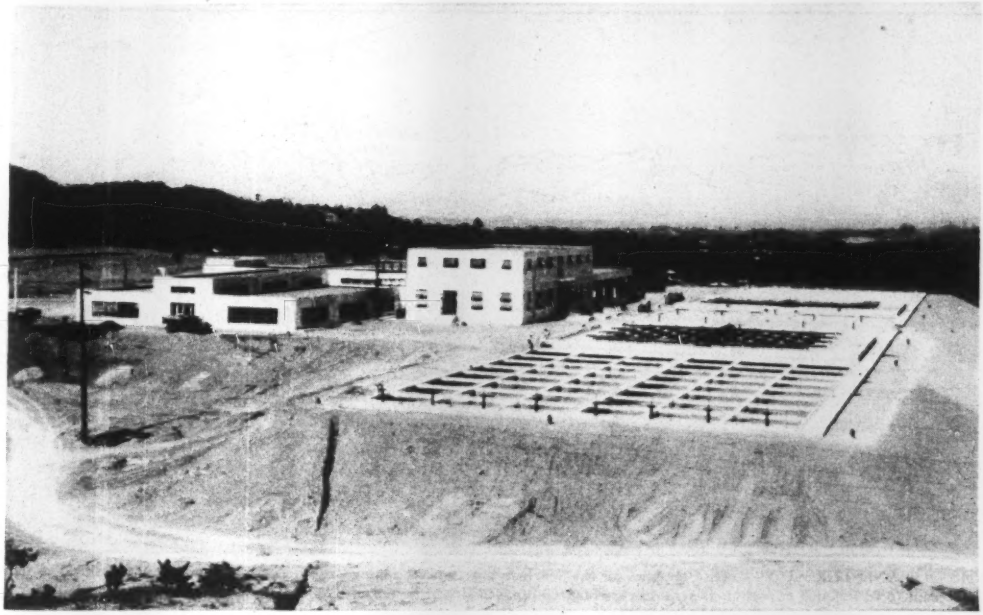
The Aqueduct and Sewer Authority was set up on the island in 1945—to bring together for the first time some 71 separate water systems that were functioning in various degrees of inefficiency (only six gave 24-hr service) and to concentrate efforts for new water resources and treatment. It engaged the consultant, and, taking first things first, went to work on essential improvements in existing systems and a new supply for San Juan.

• **Unknowns are many**—It was estimated that in 1945 less than 65% of 479,600 persons in the area to be served were connected to the existing system. So, in addition to the difficult task of projecting a population curve in a land with a changing economy, an educated guess had to be made as to effect of economic uplift on that part of the population served in homes and on sanitation facilities.

Population of the capital city (San Juan) and its rural environs within the service area was estimated to total 801,000 by 1960, 1,060,000 by 1970, and 1,175,000 by 1980. Best guess was that there would be service in 80% of the area's homes by 1980. Per capita consumption was complex to predict. While commerce and industry should expand appreciably in the next thirty years, their growth will be overshadowed by a far steeper ascent in population served, causing per capita consumption to fall off from the present 114.5 gal to 99.0, 91.0 and 89.5 gal per day in the next three decades ending with 1980—more people, but less proportionate industrial consumption.

When early studies were started, the existing sources of water for the metropolitan district were surface supplies in Guaynabo and Rio Piedras, plus wells about to be abandoned because of increasing salinity. Dependable yield of the supplies was some 21 mgd, which could be increased 6 mgd by costly emergency pumping. Total needs were forecast as 38 mgd for 1950, 53 for 1960, 70 for 1970, and 84 mgd for 1980. A new source had to be developed to make up the difference between these demands and the present supply.

• **Records are few**—Armed with these many estimates (and few facts) on demand, the consultants next considered supply. Comparative merits of two sources were weighed, and Rio Grande de Loiza was chosen over El Yunque, as being a more bountiful source



FILTRATION PLANT—Finished waterworks is functional, without frills. Design and treatment criteria had to be set.

closer to the consumer and capable of purification.

Stream flow records for the Loiza River were non-existent. A site for damming the stream was chosen, and elevation of the dam's crest had to be set, based conservatively on a most unlikely design-flood figure nearly three times the greatest flood of recollection. A flow that reached near 125,000 cfs for about half an hour on Aug. 4, 1945, caused the highest stage within memory at the damsite; the design flood was taken as 300,000 cfs, based on transportation and adjustment of data on a record hurricane in a watershed of comparable size (Thrall, Tex.—1921).

Minimum flow, recorded in 1948, was 48 cfs (29 mgd). Regulated flow—from a 20,000-acre-ft reservoir—was figured to boost the minimum up to 160 cfs. (Five years of flow records, including a severe drought period, indicate this figure is conservative. Runoff of 480 cfs was taken as average, now appears low.)

• **Quality studies needed**—Just as with its quantity, quality of the water was a factor to be determined—not from a reference work, but from field work, using a mobile laboratory.

The 205-sq mi watershed receives about 76 in. of rain annually and feeds the Loiza River a water normally of low color, moderate turbidity and medium chemical nature—uncorrosive to metal pipe.

The stream is somewhat turbulent—and more so during floods—so an estimate had to be made of the silt load it might carry and deposit in a reservoir. This sediment volume was estimated at 300 acre-ft per year, of which 90% would probably be trapped in the reservoir. Watershed terrain is mountainous; 40% is under cultivation, 55% in pasture and 4% in forest; only about 1 sq mi is now in urban development.

Caguas, largest of the upstream cities, has a sanitary sewer system—a treatment plant comprising grit chamber, Imhoff tanks, filters and sludge-drying beds. The plant is overloaded, and the effluent is of poor quality.

Two sugar mills up in the watershed contribute organic matter many times that contained in the sewage from the cities in the basin. Although not as objectionable from the bacteriological standpoint as sewage, these wastes require a large volume of oxygen for their stabilization. Sugar grinding season coincides with a period of low runoff—making a critical situation. (A pilot plant has been operated over two grinding seasons to test various treatment methods.)

• **Standards set**—With the Loiza chosen, its quantity and quality determined, the consultant had next to decide what standards the finished product (tap water) should meet. This was an underdeveloped area. Should sights be lowered somewhat, requirements relaxed, standards less stringent?

In other underdeveloped areas, perhaps; in Puerto Rico, no. The Puerto Ricans gave the answer. They are Americans; they want American standards, nothing less.

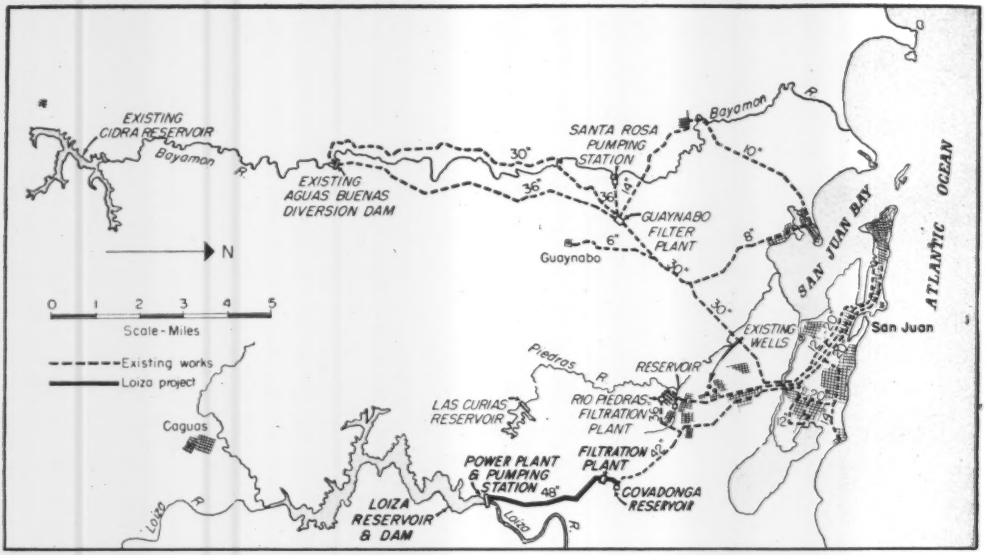
So it was. All the consultant's latest design criteria for stateside jobs were incorporated—nothing less.

Steps are to be taken to clean up the Loiza River, correct pollution upstream with full treatment. Urban sewage will be treated; sugar mill wastes will be reduced in organic content.

• **Rest is easy**—The groundwork was done; the rest was easy—comparatively. All the major unknowns that go with engineering abroad had been solved, and remaining problems needed only slight tailoring of up-to-date designs to fit the situation, adapting of modern construction methods to suit economics of cheap labor, costly equipment.

Once demand had been established, treatment needs analyzed, standards set, the consultant had a job comparable to any other he might be doing stateside.

To meet 1980 demands a 60-mgd (ultimate) filtration plant was designed; half of it (30 mgd) to fill



THE OLD AND THE NEW—Existing supplies for the San Juan area totaled 21 mgd when the new source was sought. The new Loiza plant (bold lettering at bottom of map) can now treat 30 mgd and will be enlarged to handle 60 mgd as future needs demand.

needs through 1965 has been built. Inaugurated last fall, the $2,000,000 Loiza Filtration Plant has the aerators, flocculators, settling tanks, mixing basin, rapid-sand filters, chlorination and storage necessary to deliver a clear, odorless, palatable water. Rexach & Rivera Construction Co., San Juan, was general contractor on the plant.

Delivery of water to the plant is through 3¼ miles of 48-in. reinforced concrete pressure pipe laid from the Loiza River by Frederick Snare Corp., New York.

At the bank of the river a temporary pump installation is supplying water to the treatment works, through the delivery line, while just downstream construction activity mounts on the dam that is to impound supplies.

• **Supervising construction** – Loiza Dam is being done under contract by Sollitt Overseas Construction Co., Chicago. (The Aqueduct and Sewer Authority plans to do many of its lesser jobs by force account.) The authority's consultant has responsibility for construction and provides supervisory personnel.

The damsite is nine miles south of San Juan at a point 17 miles upstream from where the northeast-flowing Loiza reaches the Atlantic. Core borings showed rock at the site to be solid andesitic tuff, a hard, black igneous material resembling traprock, under a shallow covering of soil and decomposed rock averaging less than 20 ft in thickness. No faults; some weathering were in evidence. Grouting will be done, but the rock isn't expected to take much.

The dam is being built from the left bank while the river is diverted toward the right by a rock and timber cofferdam. It will be a taintergated structure with 50-ft high crest topped by gates 30 ft high, 39 ft wide. Eight such gates will stretch across the full 312-ft spillway length of the structure. Its total length will be 700 ft.

Individual hoists will operate the tainter gates. A special gated sluiceway will carry debris over the dam.

• **Spare power**—There is an incidental power development. Electric power capacity required for pumping and treatment of 30 mgd is about 850 kw. Three units of 1,250-kva capacity will be installed for the ultimate 60-mgd capacity of the system. Permanent pumps will be electric-motor operated and located in the power plant.

Power output will be near 14,000,000 kwhr annually. Two-thirds of this will be surplus to be disposed of to the Puerto Rico Water Resources Authority, with whom a reciprocal arrangement will be made for buying and supplying power with seasonal variations in hydro production. The 38-kv transmission line to the filtration plant ties to the WRA system.

Operating expenses (less this anticipated power income) are estimated at $122,500 per year—based on the initial output of some 30 mgd. This figures to $16.78 per mg. (Present filtered supplies cost $30 per mgd.)

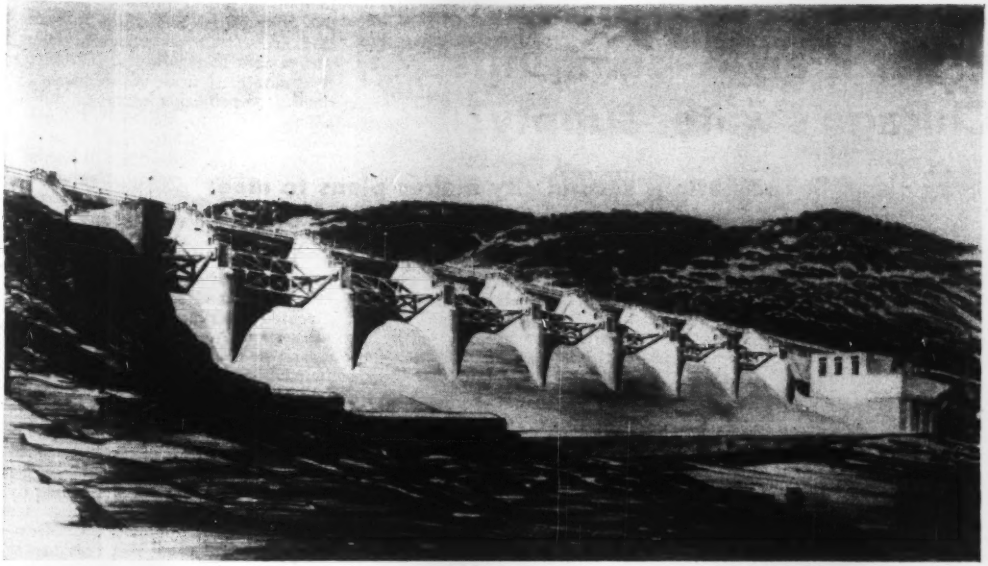
Cost of the entire project (dam, power house and pumping station, pipeline and 30 mgd purification plant) is estimated at $6,758,000—including $328,000 for rights-of-way and $47,000 for temporary pumping facilities, excluding the $400,000 cost of abating upstream pollution

• **Settling financing**—When the newborn Aqueduct and Sewer Authority came to the consultant in '45, it had little money; and its existing facilities were operating in the red. Overhauling of organizational set-up and procedures, development of a new island-wide rate schedule based on scientific principles but tailored to local conditions were necessary. A financing scheme—revenue bonds—was worked out. Then the authority had to sell it.

Determined and aggressive Sergio Cuevas, executive director of the authority, went to work on the investment bankers, came up with a $22,700,000 loan. This will cover wells, intakes, purification plants and pipelines throughout the island as well as present work on the Loiza project.

When the money is gone there will still be much work left to do. Water supplies rated first attention, but there is also an island-full of sewage works projects needing attention (only 24% of all urban buildings now hook up to sewers).

Buck, Seifert & Jost are confident that this work will be done, have greatest respect for the ability and the



THE DAM WHEN COMPLETED will have a 50-ft high crest 700 ft long, topped by eight 30x39-ft tainter gates. Stored water will produce an estimated 14,000,000 kwhr annually in the power-pumping plant at far end. There'll be excess power to sell.

will of the executives in the various governmental agencies and their determination to improve the lot of their people. Puerto Rico is considered a good safe place for investment. The insular government, its municipalities, authorities and agencies have never defaulted or been delinquent in payment of interest or principal on any obligations. This record goes back in history to Spanish crown rule. Cuevas most likely will get more money when it is needed.

In the meantime the consultant is studying the sanitation need—island wide—and planning to fill it.

All plans are made to fit the conditions of an underdeveloped land—to provide something where, in many cases, there is little or nothing. It's the work many U. S. consultants have already done abroad; that which many more will do as Point Four gets under way. The only real difference being perhaps: Puerto Rico comes closer to the ideal than other foreign areas might; it knows what it wants and is willing to cooperate to the fullest toward getting it.

James R. Cook is the consultant's project manager in Puerto Rico. He heads up a staff of about thirty men—about two-thirds of whom are now in the field on Loiza Dam under Barton Jones. Mortimer Gibbons is sanitary engineer in charge of operation of filtration plants. For the Adeduct and Sewer Authority, under Sergio Cuevas, Rafael Palmer is chief of engineering.

LOIZA FILTRATION PLANT

Steps in the Treatment Process

Aeration: Spray Type, 2 units, one on roof of each coagulating basin. Each has 68 nozzles rated at 165 gpm at 5 psi.

Rapid mixing: 2 reinforced concrete basins with propeller type mixing mechanisms, capacity 22,000 gpm each, detention period 10 sec at 60 mgd.

Coagulation: 4 reinforced concrete basins, each with one flocculating compartment and one settling compartment.

Flocculation: 4 units, paddle, across-the-flow type, variable speed motor drive in dry well, total detention period one hour at 30 mgd.

Settling: 4 compartments, total detention period 4.4 hr at 30 mgd.

Filtration: 12-hr rapid sand filters, with 18" of sand, 0.45 mm effective size, and 18" of gravel, graded 1/16" to 1½", on Wheeler false bottom. Fixed nozzle type surface wash. Capacity of each unit 2.62 mgd at 2 gal/sq ft/min.

Chlorination: Prechlorination—2 manual control, solution feed chlorinators, maximum capacity 2,000 lb per day each, arranged to feed to raw water line ahead of aerators. Post chlorination—2 manual control, solution feed chlorinators, maximum capacity 2,000 lb per day each and one similar machine, maximum capacity 40 lb per day, arranged to feed to plant effluent (filtered water).

Chemical feed: Alum—3 gravimetric type dry feed machines with solution pots, maximum capacity 4,500 lb per hour each. Hydrated lime—2 gravemetric type dry feed machines with solution pots, maximum capacity 2000 lb per hour each. Soda ash—One machine, similar to and interchangeable with hydrated lime machines. Activated carbon—2 volumetric type dry feed machines with solution pots, maximum capacity 100 lb per hour each.

Wash water: Reinforced concrete basin, capacity 500,000 gal, on hill near plant. Wash water pumps—Motor driven centrifugal pumps in duplicate, capacity 2,500 gpm each. Surface wash pumps—Motor driven centrifugal pumps in duplicate, capacity 2,500 gpm each.

Distribution storage: 10,000,000 gal located 0.25 mi from filter plant.

What if an A-bomb hits Chicago's water supply?

• The nations second city makes plans to meet the worst. There's a lesson in it for others.

WATER PLANT OPERATORS may well look to Chicago for some of the answers on how to decontaminate radioactive water, in case of an atomic bomb attack.

Research conducted at Chicago's South District Filtration Plant over the past several months has had two objectives: (1) To develop dependable and quick methods of determining the degree of radioactivity of the water and (2) to find practical and economical ways of removing the radioactive materials from large volumes of water under full plant operation.

While there are still a great number of fearful and as yet unanswerable questions regarding the safe treatment of radioactive water, Chicago and scientists in the United States have found the answers to a few. For instance, it is well known that coagulation, sedimentation and filtration will remove several forms of radioactivity.

Chicago's studies at the South District Filtration Plant are under supervision of John R. Baylis, chief filtration engineer, H. H. Gerstein, chief filtration chemist, and J. T. Cross, principal filtration chemist—all reporting to Public Works Commissioner O. E. Hewitt and City Engineer W. W. DeBerard.

What if an A-bomb hit?

• **Northside vulnerable**—Although the South District plant would protect the water supply of one-third of Chicago's 3,606,000 population, the remaining two-thirds on the west and north sides would face a famine of safe water. Even by pushing the capacity of the 12 pumping stations and the interconnected distribution systems to the limit, at least one half of the population would be without potable water.

About the only recourse northsiders would have would be to haul water from the south side, plus whatever amounts of uncontaminated water there would be in storage. To deal with such an emergency, the city has about 1,500 sprinkler tanks of 15,000 to 100,000-gallon capacities. Both Hewitt and DeBerard have urged the citizens to keep at least one week's supply of water stored in sealed containers in their homes.

Other sources of potable water, in case of an atomic bomb attack, would be house tanks in the larger buildings, elevated storage tanks owned by the several hundred laundries throughout the city, about 200 ground wells within the city limits that can pump 2,500,000 gallons per day, and suburban reservoirs. Over recent years the city has insisted that any suburb buying Chicago water provide reserve storage for at least a 24-hr supply. Of the 48 suburbs now purchasing Chicago water, 17 have underground and elevated storage totaling 59,000,000 gal.

• **Northside plant needed**—Although southsiders have some measure of confidence that their water supply would be protected by the 320-mgd South District Filtration Plant, northsiders have little prospects of receiving adequate supplies of safe water following an atomic explosion near their intake in Lake Michigan. Consequently they hope the city's long-planned 950-mgd Northside filtration plant—approved in January by the Army Engineers—will become a reality just as soon as materials and construction schedules will permit.

• **Applying AEC findings**—Reports of experimental work by the Atomic Energy Commission indicate that chemical precipitation of nuclear fission materials takes place best at a high pH, requiring lime and an iron compound. In this treatment, the lime is ordinary commercial quick, or slaked, lime. The iron compound is iron sulphate; a by-product of pickling liquor from steel rolling mills. Currently, Chicago is using lime and aluminum sulphate as a coagulation agent.

If Lake Michigan water were contaminated with nuclear fission materials it would be necessary to increase substantially the amount of lime. Aluminum sulphate does not form a good coagulation above pH of 8.0, whereas iron sulphate precipitates best at pH greater than 9.0. No revisions of the plant would be necessary since it was originally designed to use iron sulphate as a precipitate.

• **Radioactive lake mud**—Chief reason why coagulation, sedimentation and filtration would be such an important factor in treating radioactive water is this: If an A-bomb were set off under water in Lake Michigan near a water intake, it would stir up a lot of mud. This suspended and colloidal matter rising from the bottom of the lake would absorb much radioactivity.

Although most of the suspended matter would soon settle back to the bottom of the lake, waves caused by winds would stir it up in much greater amounts than at present. Conservative estimates place this turbidity at twice that which is now present in the water.

Raw water entering the lake intake cribs this winter has had a relatively high turbidity. The period of 106 days from Nov. 1, 1950 to last Feb. 14 contained 89 days in which the turbidity was greater than 10, the limit set by the U. S. Public Health Service for drinking water. During November the turbidity averaged 18. For December it averaged 22, with a maximum of 75 for two days.

The problem of radioactive water wouldn't pass quickly after an A-bomb attack. Soluble radioative substances would be dissipated by currents of water in the lake. But that attached to the sedimentation in the bottom of the lake would, from time to time, be picked up by wave action. If the concentration were high enough, this would be a constant threat to the health of the people consuming the water.

Two testing devices installed in the laboratory at the South District Filtration Plant show considerable promise in detecting radioactivity in the water.

• **Monitoring equipment**—One machine, manufactured by the Radiation Counter Laboratories, Inc., Chicago, makes a continual graph that indicates the presence of radioactivity in the water, such as beta and gamma rays. In operation, this monitoring equipment receives a constant flow sample from the main raw water line and subjects it to continuous contact with a Geiger-Muller counter.

The voltage pulses from the Geiger counter which enter an electronic cir-

cuit are indicated on an instrument panel of the circuit setting forth the voltage impulses per minute. As these pulsations are integrated over a time constant of 60 seconds, a voltage is built up across a condenser, proportional to the rate of arrival of the pulses. This voltage is then transmitted to a recording chart.

Normally, the recording chart needle indicates the "background" count, due to the ever present cosmic ray particles in the atmosphere. If radioactivity then enters the water, the needle will mount to a peak, indicating the intensity of the radioactivity of material present.

The machine may not, however, prove to be the final answer in detecting the amounts of nuclear fission materials resulting from an atomic blast. In fact, it could give a false sense of security unless further research proves it to be capable of detecting and measuring all fission materials resulting from an atomic explosion.

• **Precision counter**—The second machine, made by the Nuclear Measurement Corp., Indianapolis, Ind., determines the radiation of water by testing concentrated samples. This machine is quite accurate and can count extremely low energy rays with full efficiency.

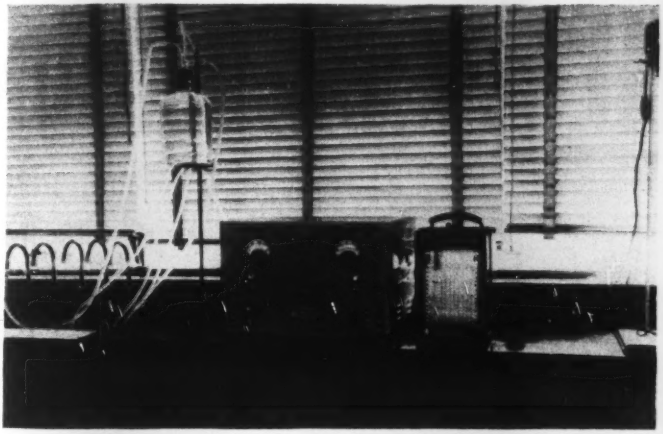
The machine, however, is not intended for monitoring usage due to the time interval of one-hour or more required to concentrate a water sample.

Small enough to be portable, this radiation counter has an automatic timer and a six-digit register. A solenoid valve automatically purges and controls the flow of argon gas through the chamber in order to sweep out the air that would interfere with the counts. All the operator has to do is record the data, exchange samples, reset the register and flush the chamber, and reset and start the timer.

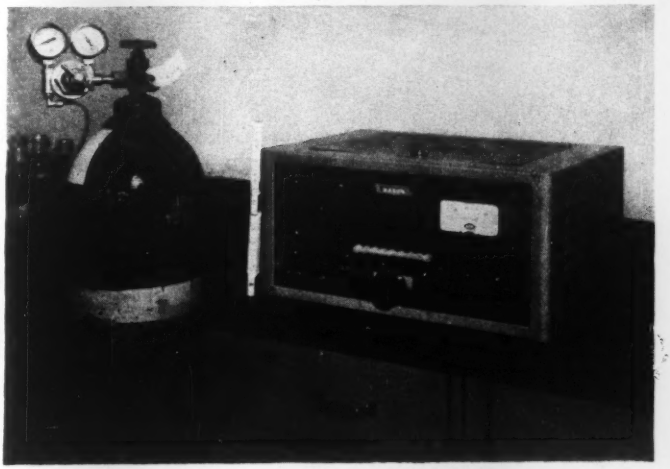
• **Fission samples needed**—Biggest handicap in current research at the South District Filtration Plant has been the inability to secure nuclear fission samples known to exist in atomic bombs. Negotiations are underway, however, and it is believed that such products will be available within several weeks.

So far, in Chicago they have been working only with radio-active iodine. Whether the monitoring equipment can safely detect the presence of other nuclear fission materials is yet to be determined. Also, there are unknown questions such as what constitutes a lethal dosage for the various materials, and what are safe tolerances for consumption over say, a 24-hr period, 30 days or indefinitely.

Current research may disclose that:



SAFE WATER SUPPLIES for U. S. cities can be monitored by a continuous recording radiation counter, while . . .



PRECISION INSTRUMENTS for counting beta and gamma rays may establish safe tolerances for nuclear fission materials in the water.

• **Some big figures**—Estimates of the total gamma activities of the fission products of a nominal bomb, as given by the Atomic Energy Commission in a book published last September is 8.2×10^5 megacuries. This is 820,000 megacuries, or 820,000,000,000,000 curies. One curie equals 3.7×10^{10} disintegrations, or 37 billion. This amounts to 2.1×10^{25} "Mev" of energy, or 21,000,000,000,000,000,000,000 Mev. One Mev is a million electron-volts. Within 24 hr this total energy will be reduced to 3.4×10^{18} Mev of energy per second, which still is a large figure.

The first figure, however, is 6,165 times the second figure. The reduction is enormous, yet the amount remaining is still high. If such a bomb were set off under water in Lake Michigan near a water intake, there would be great contamination with radioactive material, the magnitude of which cannot be estimated with any degree of accuracy.

In comparison with the foregoing astronomical figures, the acceptable safe tolerance level for water containing fission products—as published in THE EFFECTS OF ATOMIC WEAPONS, prepared under the direction of the Los Alamos Scientific Laboratory—is $4 \times 10 - 6$ microcurie per cubic centimeter.

NEW A.C.I. BUILDING CODE...

Recognizes the Advantages of the A305 Reinforcing Bar

The revised "Building Code Requirements for Reinforced Concrete" has now been formally ratified by the American Concrete Institute.

This new code contains some of the most important changes made in many years. These changes were made possible by the new A305 reinforcing bar. By using A305 bars under the new code, you get better, more economical structures.

WHAT ABOUT YOUR LOCAL CODE?

To participate in the benefits offered by the new A.C.I. Building Code, your local code must be changed to conform. Take action, now, to see that your local code is changed!

Copies of the new A.C.I. Code may be obtained, for a small charge, from the **American Concrete Institute, 18263 W. McNichols Rd., Detroit 19, Mich.**

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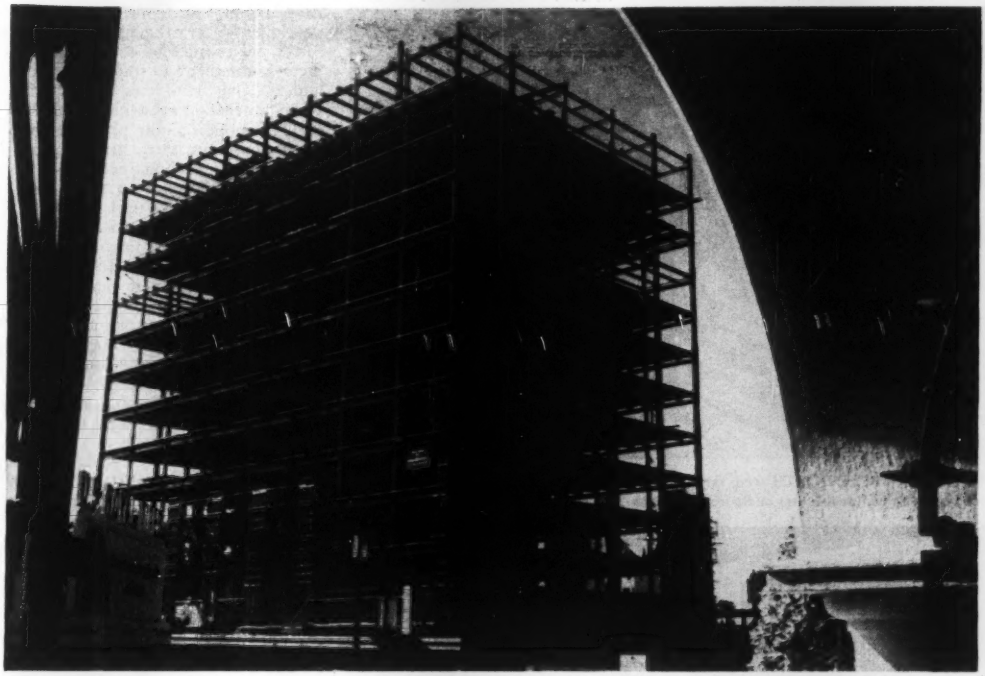


STEEL FRAME for 12-story office building on Wilshire Boulevard, in Los Angeles is lightweight though designed for earthquake resistance. Exterior will be glass, except for some cast-in-place concrete panels.

Weight saving means money saving on Los Angeles building group

THE STRUCTURAL FRAME for three buildings now going up in Los Angeles weighs only eleven pounds per square foot of floor area. Yet, the construction provides resistance to high earthquake stresses and it has 3 and 4-hour fire resistance.

All this was made possible by taking advantage of recent changes in the Los Angeles Building Code.

Savings in weight for these buildings also means savings in cost. The completed structural frame is said to cost $3.56 a square foot. This includes structural steel, reinforced concrete, floor system and lightweight fireproofing.

Most of the weight-saving features in the three buildings in question have been used in other structures either in Los Angeles or other parts of the U.S. The new feature in this design is use of prefabricated steel floor panels acting as transverse diaphragms to transmit lateral or earthquake forces. And this is new only to relatively tall buildings, since it has been used on a

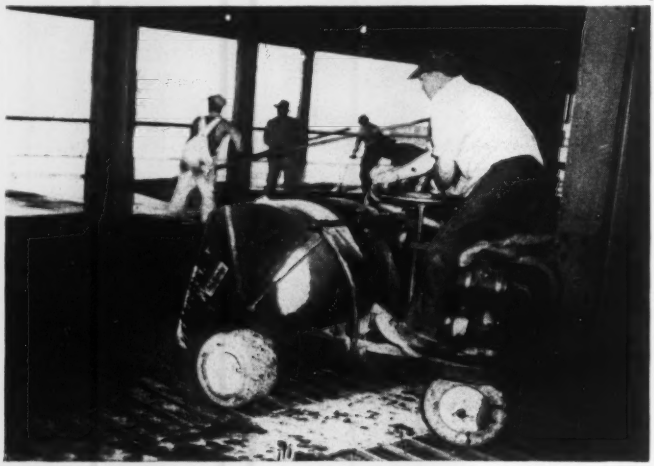
HOW CODE APPROVAL WAS OBTAINED

Use of hollow-steel floor panels as a diaphragm to transmit horizontal loads illustrates how the Los Angeles Building Code is continually revised to keep up with improvements in materials and design practice. Before such panels were approved, reinforced concrete floors served to distribute seismic and wind loads. Advantage in the use of the steel panels is to be obtained in lighter weight and faster, more economical construction.

Committees of the American Society of Civil Engineers and the Structural Engineers Association of Southern California that were making a special study of such diaphragms interested two manufacturers in making large-scale tests. These tests, conducted by an independent testing laboratory, were instrumental in establishing design criteria after analysis and interpretation by Consulting Engineer S. B. Barnes. Building officials were convinced of the practicability of such design, so the code was altered accordingly.

It wasn't really as easy as it sounds. New methods of welding the zinc-coated panels had to be developed. Crimping the panels together did not produce a rigid enough diaphragm and existing welding methods were not considered adequate. However, this hurdle was passed by development of special electric welding techniques. The engineers, in cooperation with a welding equipment manufacturer, made studies and tests that resulted in the use of E7016 electrodes. Spot welding the panels to the frame on 12-in. centers, plus the concrete fill, made the panels sufficiently rigid to resist substantial amounts of shear in both directions.

WELDING TECHNIQUES were developed to attach flooring to steel frame. These techniques helped enable use of flooring as diaphragm to resist horizontal loading.



POWERED CONCRETE BUGGIES operated on the steel deck with no protective pads required. Thus, pouring operations were more flexible and speedier.

two-story bakery building also in Los Angeles (ENR Oct. 12, 1950, p. 36).

Lightweight plaster fireproofing applied as an envelope is the other major weight-saving feature. Such fireproofing has been in use in recent years in other new buildings, notably in Los Angeles and Houston.

The lightweight Los Angeles structures form a group of three identical 12-story (height limit) office buildings being built for Tishman Realty and Construction Co., Inc., of New York City. The project is located on Los Angeles' famous Wilshire Blvd. just west of the Ambassador Hotel. The building frame for the first unit has been completed and interior finish work is now under way. Foundations for the other two units are completed, and structural steel erection began early in March.

Upper floors of each building are 100x150 ft in plan. This entire area is available for partitioning as suits the needs of tenants, with the exception of a 20x75-ft interior elevator and utility core. Retail stores will occupy the entire ground floor of each building. The three units will be connected by one-story store buildings.

• **Structural steel frame**—The steel is reduced to the ultimate in simplicity, the designers claim, because it's intended to resist vertical loading only. All horizontal loads such as might be developed by earthquake and wind forces are resisted by reinforced concrete encasement of the utility core and by some reinforced concrete exterior panels that act as shear walls.

This simple framing plan, the engineers point out, is in itself a significant factor in reducing weight of the structure. There are no heavy spandrel trusses or beefed-up joint connections required to transmit bending moment from girders to columns.

However, since no diaphragm can be considered infinitely rigid, the engineers designed into the frame a minimum degree of moment resistance. This problem is one of engineering judgment, since a mathematical analysis would take too long and would be of questionable value, the designers say. For this minimum moment resistance, top and seat angles were used to attach girders to columns. This is in lieu of standard framing angles for both web and flange connections.

The thickness of the top and seat angles was set to develop the capacity of the rivets in tension using a minimum gage in the vertical leg. Further, these connections were to carry the vertical load in the outstanding (i.e., horizontal) leg without stiffeners.

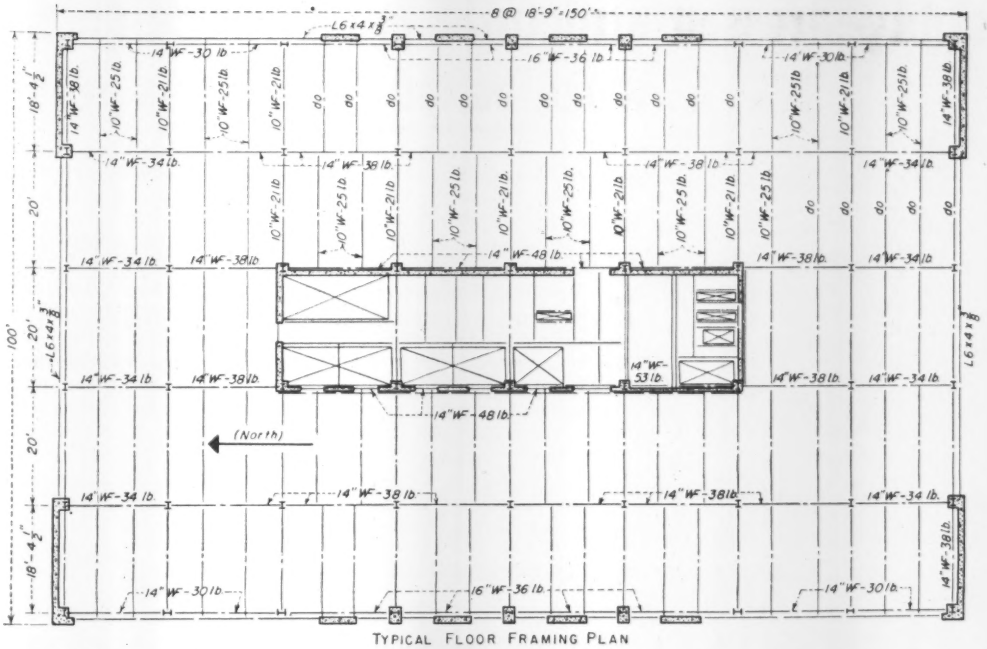
All framing to the columns was shop and field riveted. Framing for intermediate beams was shop riveted and field bolted.

• **Floor takes shear**—Each floor consists of cellular light-gage steel panels. These are spot welded to the steel frame on 12-in. centers and covered with a minimum of 2 in. of concrete. Horizontal forces will be absorbed by this flooring system, which will act as a diaphragm, say the designers, and such forces are transmitted to the various vertical resisting elements in proportion to their relative rigidity (ENR Dec. 23, 1948, p. 67).

The engineers designed into the flooring reserve strength so they could approve location of occasional openings in the floor.

Seismic shears are much greater than shears induced by wind load. With wind acting on the long dimension of the building exerting a force of 15 psf for the first 60-ft height and 20 psf above that, shear in the first story is twice as much for earthquake loading as for wind load. And in this case earthquake load is significantly reduced by weight-saving design (earthquake load is assumed at a percentage of the dead loads above a floor level).

These steel and concrete floors will transmit horizontal force at each floor level primarily to the 12-in. thick reinforced concrete walls of the central



TYPICAL FLOOR FRAMING PLAN

CENTRAL UTILITY CORE, 20x75 ft in plan, has reinforced concrete walls that act as shear resisting elements for horizontal loading. Plan of upper floors on all three buildings is similar.

utility core and to the exterior concrete panels. Resistance to shear designed into the vertical concrete walls provides earthquake protection.

Since almost the entire exterior is glass window construction, no such resistance was available in the outside walls. That is with the exception of architectural concrete panels at each end that provide some earthquake resistance in the east-west direction. The resistance in the north-south direction (the long dimension of the building) is built entirely into the core walls.

As the steel frame was not designed for much horizontal force, it was important to have the steel floor panels placed and welded as close behind the structural steel erectors as possible. The stiffening effect of the welded floor panels was evidenced during erection, particularly when the guy derrick boomed out to pick up steel from the ground to be placed on one of the upper floors.

Use of the prefabricated floor panels permitted other building trades to get on the job almost as soon as the steel frame was erected. This advantage has been exploited repeatedly in constructing other buildings, such as the Sinclair Oil Building in New York City (ENR, Dec. 28, 1950, p 20). The prefabricated panel system also is used as electric wiring raceway.

• **Simple fireproofing system**—Columns are fireproofed by enveloping them in a 1-in. thickness of vermiculite plaster. Furring strips hold the wire mesh the required 1¼ in. away from the steel column.

The floor beams and entire floor panel system are protected on the bottom by a false ceiling of 1-in. thickness of vermiculite plaster suspended 14 in. below the bottom of the floor beams. This suspended-ceiling fireproof envelope is used in place of individual encasement of each beam as has been required on many structures in the past. Weight saving is obvious.

The Los Angeles Building Code allows 85 sq in. in 100 sq ft of such fireproofing for duct openings and the like. Also permitted is one 4x4 outlet box in each 90 sq ft of such fireproofing. This does not significantly reduce the fire resistance. However, the building department must approve the nature, type and location of such openings in each case.

This envelope type of fireproofing was proven in National Bureau of Standards tests five years ago. As a result of these tests several other cities besides Los Angeles have incorporated similar provisions in their codes.

The building is founded on a blue-shale formation running from 16 to 35 ft below the basement level of the building. This permitted use of drilled, reinforced-concrete, belled caissons for foundations.

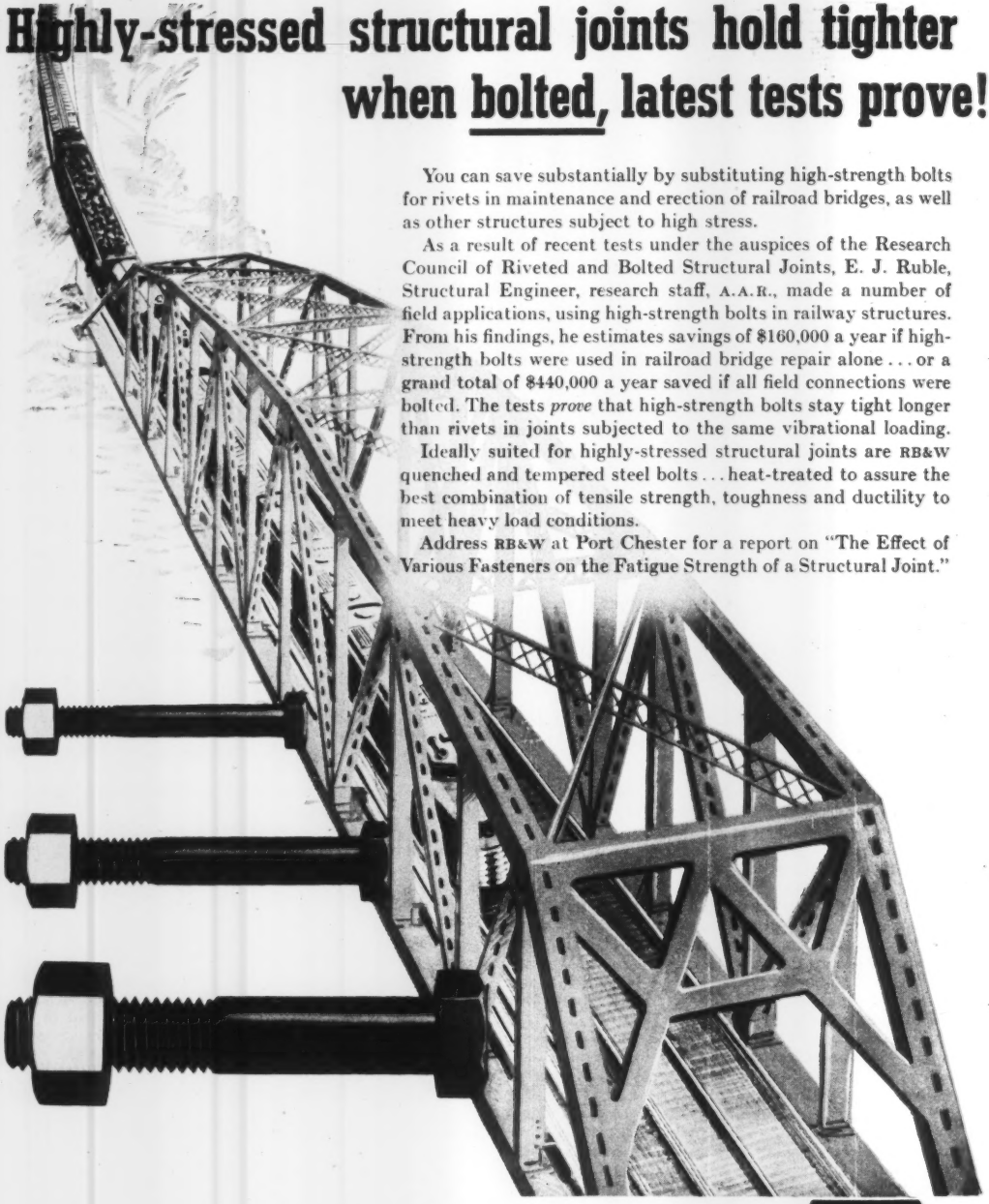
Architectural features include an exterior almost entirely of glass. Besides that, the buildings are 100% air conditioned with the air conditioning equipment located in the utility core at the seventh floor level. This is in place of having it either on the roof or in the basement and permits better distribution of cooled or warmed air.

Office layout is flexible since no partitions are installed in advance of leasing the space.

The Tishman Realty and Construction Co., Inc. was represented in the planning by Victor Mayper, consulting engineer. Architect for the work was Claude Beelman with Herman Spackler, associate architect. The building frame was designed by George E. Brandow and Roy G. Johnston, Los Angeles structural engineers.

C. L. Peck, Los Angeles general contractor, is building the project. Bethlehem Pacific Coast Steel Corp., Fabricated Steel Construction Division, is furnishing and erecting the 3,500 tons of structural steel in the job. Steel floor decking was manufactured by H. H. Robertson Co., Pittsburgh, Pa. The Lincoln Electric Co. helped develop the new welding techniques.

Highly-stressed structural joints hold tighter when bolted, latest tests prove!



You can save substantially by substituting high-strength bolts for rivets in maintenance and erection of railroad bridges, as well as other structures subject to high stress.

As a result of recent tests under the auspices of the Research Council of Riveted and Bolted Structural Joints, E. J. Ruble, Structural Engineer, research staff, A.A.R., made a number of field applications, using high-strength bolts in railway structures. From his findings, he estimates savings of $160,000 a year if high-strength bolts were used in railroad bridge repair alone . . . or a grand total of $440,000 a year saved if all field connections were bolted. The tests *prove* that high-strength bolts stay tight longer than rivets in joints subjected to the same vibrational loading.

Ideally suited for highly-stressed structural joints are RB&W quenched and tempered steel bolts . . . heat-treated to assure the best combination of tensile strength, toughness and ductility to meet heavy load conditions.

Address RB&W at Port Chester for a report on "The Effect of Various Fasteners on the Fatigue Strength of a Structural Joint."

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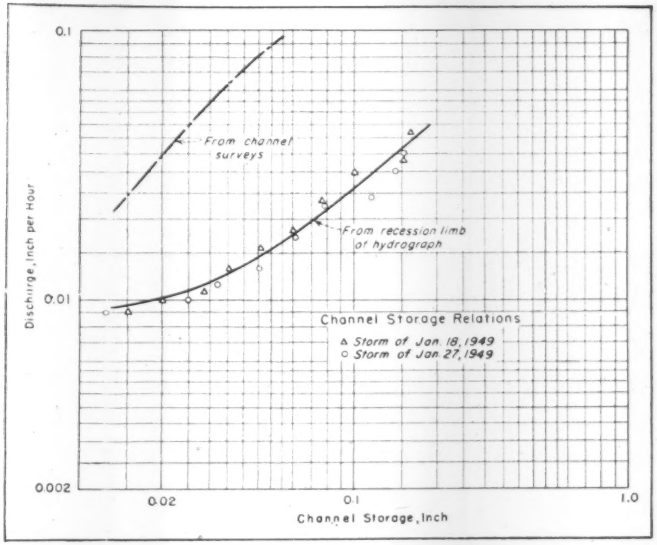

MEASURED VS. CALCULATED STORAGE—Channel storage found by field surveys varies widely from that calculated from the hydrograph, indicating amount of water detained on streets and in drainage system.

Urban runoff data studied in Urbana by U. of Illinois

Milton O. Schmidt
Associate Professor of Civil Engineering University of Illinois

INSTRUCTION IN HYDROLOGY is being combined with a local research project by the University of Illinois, Urbana. Complete basic hydrologic data on Boneyard Creek—periodic flood-threat to the twin cities of Urbana and Champaign—are being collected by graduate students to guide choice of flood control measures there, and to furnish rainfall-runoff relationships that may be extended to similar urban areas elsewhere.

Some 4.45 sq mi of the Boneyard's basin are under study by the University's hydrological laboratory, a facility of its department of civil engineering. The area is predominantly urban—about 32% impervious. Soil in pervious portions is loess and glacial till, loosely described as a brown silt loam.

In the 2.85-mi length under study, the creek falls 36 ft. Its relatively small channel has suffered alterations as the area built up, and in some places homes and business structures have been built over it.

Collection of stream discharge and precipitation data was begun in the summer of 1948. Average percentage of runoff has been 19%—a rather conservative value if used in urban storm sewer design. Heavier rains than those thus far experienced may cause considerably greater percentages of runoff.

Data are being plotted to show:

(1) Increase in peak rate of runoff with increase in the volume of direct runoff, using duration of effective rain as parameter.

(2) General increase in unit peak-flow with decrease in the duration of effective rain. (Unit peak-flow is analogous to unit hydrograph peak and would be the same if the storms were all of unit duration.)

(3) Relation between the volume of channel storage determined from reliable channel surveys and the theoretical storage found from flood hydrographs.

The falling portion of the hydrograph to the right of the point of inflection is commonly termed the recession limb and represents (according to R. E. Horton) the flow out of storage. By summing progressively the areas beneath the recession limb in a reverse chronological order from the moment surface runoff ends to the point of inflection, the volume of storage can be calculated.

Relatively wide divergence between the two storage curves (left) is indicative of detention of flood waters on the streets and in the conduits of the drainage system. This is interpreted as confirmation of the concept that the recession limb of a flood hydrograph from an urban area is associated with what may be termed "composite storage." This is the combined volume of water which is in transit over the pervious and impervious areas toward the gutters, plus that which is in the gutters, the conduits, and in the stream channel itself.

• **Detention effect**—Peak rates of runoff experienced are on the order of only 75 cfs per sq mi even though fairly heavy rains occurred. It is believed this moderate unit discharge is related to detention effects of the municipal drainage system which throttles the flow on its way to the Boneyard—rather than to the existence of conditions favoring high infiltration rates.

Retarding action results from ponding of water on the streets and alleyways because of poor inlet conditions and from the surcharging of sewers on account of adverse hydraulic conditions in these conduits when the Boneyard is at high stages. This is instrumental not only in delaying the transit of flood waters through the main channel and reducing the peaks, but also helpful in prolonging the period of opportunity for infiltration and possibly decreasing the volume of flood runoff.

On the other hand, existing records of extreme flood discharges in Illinois point to the possibility of crippling floods on the Boneyard when surface conditions are so improved that runoff reaches it more promptly.

• **Cooperative effort**—Equipment of the hydrological laboratory includes nine recording rain gages of the weighing type and a river gaging station with automatic stage recorder. U. S. Geological Survey operates the gaging station, which was built with funds provided by the Illinois State Water Survey. There is also a U. S. Weather Bureau evaporation station maintained and serviced by the Water Survey.

The Boneyard project is a cooperative venture of the University of Illinois; the Illinois State Water Survey, of which A. M. Buswell is chief; and the U. S. Geological Survey under J. H. Morgan, district engineer. W. C. Huntington is head of the department of civil engineering. J. J. Doland is in charge of the project assisted by the writer.

We Must Pay As We Go

***We** must do our utmost to pay as we go for our present defense program.*

On that proposition those who speak with authority are remarkably well agreed. This editorial – the second in a series on our mobilization for freedom – sets forth in simple terms why there is this agreement.

Next year – the fiscal year beginning next July 1 – the federal government's budget calls for the expenditure of $10 billion more than is scheduled to be collected in taxes. The deficit is due to the increase in defense expenditures.

A part of this deficit can be eliminated by cutting non-essential expenditures and increasing efficiency in the defense program. There is wide agreement on this. It is the duty of the President and Congress to see that it is saved.

How the remaining deficit anticipated in the federal budget—$5 billion to $10 billion—is handled is crucial. The government can meet it by raising taxes—by paying as we go. Or it can borrow, issuing more government bonds.

Borrow Again?

We relied heavily on borrowing in both World War I and World War II. In World War I only about one-third of the expenditures of the federal government were met by taxation. In World War II about 45 percent were met in this way. The rest we borrowed. Some people ask, why can't we rely heavily on borrowing again? Why is it crucially important to avoid adding $5 billion to $10 billion to a federal debt that is already $257 billion?

Part of the answer is found in the contrast between this defense program and our all-out effort of World War II. Another part—and one that is all-important in combatting inflation—results from the rapid decline in the purchasing power of the American dollar in recent years.

We went "all out" in World War II. We put almost half of everything we produced into our military effort. Taxes high enough to pay the financial costs as incurred would have meant huge tax increases. It was feared that such increases would kill financial incentives to get "all out" production. Since we expected the war to be short, borrowing seemed a safe expedient. Price control and rationing, with wartime patriotism to give them effective support, were relied upon to keep in check the inflationary pressure created by borrowing rather than taxing.

Our present defense program is scheduled to take a much smaller share of our production, but to take it over a much longer period. At its peak, the program as now planned will take only about 20 percent of our total national production. But, to use General Bradley's phrase, "the conditions under which we labor may persist for ten, fifteen or twenty years."

What About Controls?

For a period of any such duration it would be foolhardy to expect that the sort of controls we had for the few years of World War II could hold in check the inflationary pressure created by not paying as we go. It would be as foolhardy as it would be for a family to plan on borrowing to pay the expenses of a member discovered to be afflicted by a chronic ailment which might last a long lifetime.

Obviously, the only safe thing to do in such a case would be to adjust the family budget so that the expenses of the illness would be paid currently.

Our heavy reliance on borrowing in World War II had consequences which block a successful repeat performance.

If the borrowing had been done by persuading individuals to transfer their savings into government bonds, relatively little inflationary pressure would have been created. What the government would have spent with the proceeds of such bond sales would have been subtracted from the money individual consumers could spend.

But much of the borrowing was done from banks. That course expanded the amount of money available to the government without any offsetting subtraction of money from the hands of individuals. Thus, when direct price controls were removed after the war, this bottled-up purchasing power contributed to a price inflation which has cut purchasing power of the American dollar about in half – and decidedly changed the attitudes of the American people toward that dollar.

During World War II, Americans in general believed that:

The war would not last long.

The dollar would hold its value, and even gain value after the war.

Many wonderful new products would be available in the postwar period.

Today the American people have:

Seen the value of their dollars melt away fast.

Been assured that, at best, we may have a 10-15-20-year pull ahead.

Been warned not to expect a postwar paradise anytime soon.

One result of these changed attitudes is a notable lack of enthusiasm for government bonds on the part of individual investors. This is indicated by the fact that since Korea redemptions of E bonds have exceeded sales by about $600 million. Another result is a continuing rush to convert dollars into physical goods and equipment or claims on them. This trend weighs against financing the prospective federal deficit by borrowing from individuals.

Borrowing from banks to meet the deficit would again add fuel to inflation.

The prospective deficit is due to federal expenditures for military goods. Even if they are not blown up or shipped abroad, these goods will not be available to civilians. But the money paid to those who produce military goods will still be available to bid up the prices of civilian goods. Thus, at a time when people show relatively little disposition to save dollars, a menacing inflationary pressure – an inflationary gap, the economists call it – will be created.

If our fight against inflation is to be successful this gap must be closed by taxes. We need to do other things, too, for inflation has many different causes. Credit expansion must be effectively controlled. Production of civilian goods must be increased as much as possible by eliminating waste and inefficiency. But a pay-as-we-go tax program is basic to a successful attack on inflation. And inflation – unless it is checked – could wreck our defense effort.

We cannot pay as we go merely by soaking harder the corporations and those in the upper income brackets.

As the President's Council of Economic Advisers has reported, "by far the largest part of the additional revenue must come from the middle and lower tax brackets. These are the brackets in which the great bulk of the income is located."

Taxes Can Attack Inflation

By spreading tax increases broadly, taking small amounts from many people, inflationary pressure would be effectively reduced. It is the expenditures of the great mass of people, rather than the small numbers in the upper income tax brackets, that create most of the pressure. Moreover, it is possible to increase taxes broadly without killing the economic incentives to produce. Maintaining these incentives is essential to the success of the defense effort.

Our elected representatives cannot be expected to be enthusiastic about a pay-as-we-go tax program. It involves increasing the taxes of the great body of their constituents, an operation completely lacking in political glamour. However, such a program also involves the integrity of the American dollar. And that is absolutely essential to the success of the defense program. We shall be very foolish if we do not let our leaders know that we want them to do everything possible to pay as we go.

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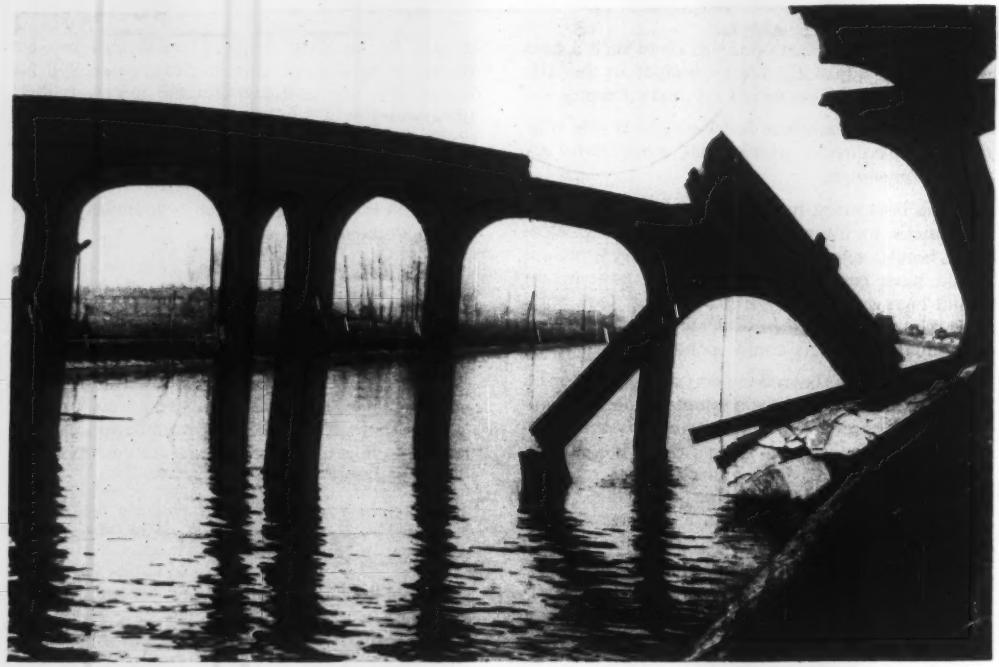

FIG 1. COLLAPSE of Vierendeel truss bridge on the Albert Canal at Hasselt, Belgium, March 1938. (N. J. Rengers photo)

Brittle fractures in welded bridges

P. P. Bijlaard
Associate Professor, Structural Engineering
Cornell University,
Ithaca, N. Y.

COLLAPSE of the Duplessis Bridge in Quebec (ENR Feb. 8, p 23) reminds me of several bridge failures that occurred in Europe before World War II. I had an opportunity to visit the site of one of these—a Vierendeel truss bridge at Hasselt, Belgium, during the winter of 1937-1938—and inspected hundreds of brittle cracks that formed without plastic deformation before and in collapse (Fig. 1).

These failures showed clearly that structural steel does not always behave as a "ductile" material. As a matter of fact, the brittle or plastic behavior of any material depends on the temperature and state of stress.

In general, a material behaves plastically if the shear stress in certain crystallographic planes is high enough to cause slip in those planes. But the simultaneous maximum principal tensile stress must be less than the normal stress at which brittle fracture would take place. If this limiting value of the normal stress is exceeded, brittle failure occurs.

Thus, a so-called ductile material, like structural steel, may behave in a brittle manner when it is subjected to triaxial tension (as, for example, in the center part of the neck of a round test bar). On the other hand, a so-called brittle material, like concrete, may behave plastically if it is subjected to triaxial compression (as, for example, in spirally reinforced columns). The same applies to rocks in the deeper strata of the earth's crust.

• **Plastic or brittle?**—Occurrence of plastic deformation or brittle failure is governed by rather intricate laws. In simplified form, this happens:

If two of the three principal stresses, such as shrinkage stresses induced by welding, are equal or nearly equal, plastic deformation may be assumed to start when the maximum shear reaches a certain limiting value. For a steel with a well defined yield point, for example, this limiting value, which will be called the shear yield stress, is half the yield stress in pure tension (since in the special case of pure tension, the maximum shear stress is numerically equal to half the tensile stress). On the other hand, for simplicity, one can assume with reasonable accuracy that brittle fracture will occur when the maximum principal tensile stress reaches a certain value—the brittle strength.

As indicated in Fig. 2, the stresses in any plane through a point in a body may be represented by points in a normal-stress, shear-stress diagram (Mohr's circle). In this diagram, for steel with a well defined yield stress, and at a certain temperature, shear yield stress as defined above is represented by a line parallel to the normal-stress axis. Brittle strength is indicated by a line parallel to the shear axis.

In Fig. 2, for simple tension (when the two lower principal stresses are zero), the stresses in all planes are given by points of the solid-line circle. If the applied tension increases, the circle gets larger. If the tension becomes big enough, the circle will touch one of the limiting lines. For the shear yield stress and brittle strength depicted in Fig. 2, the enlarged circle, shown by dashed lines, meets the shear-yield-stress line first. Hence, plastic deformation will occur.

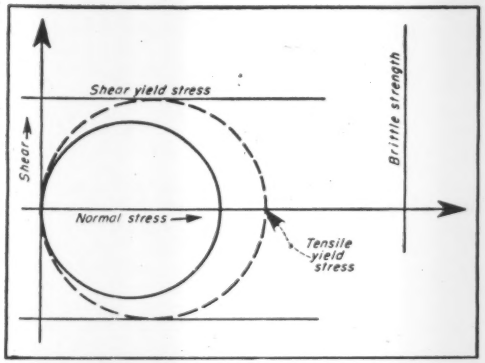

FIG. 2. FOR PURE TENSION, as stress increases, Mohr's circle gets larger, meets yield-stress line. Plastic deformation occurs.

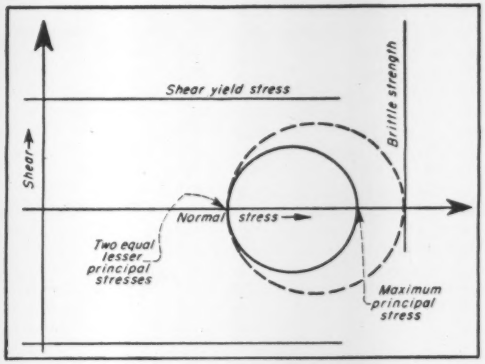

FIG. 3. FOR WELDED STRUCTURES Mohr's circle meets the brittle-strength line. Brittle fracture may occur.

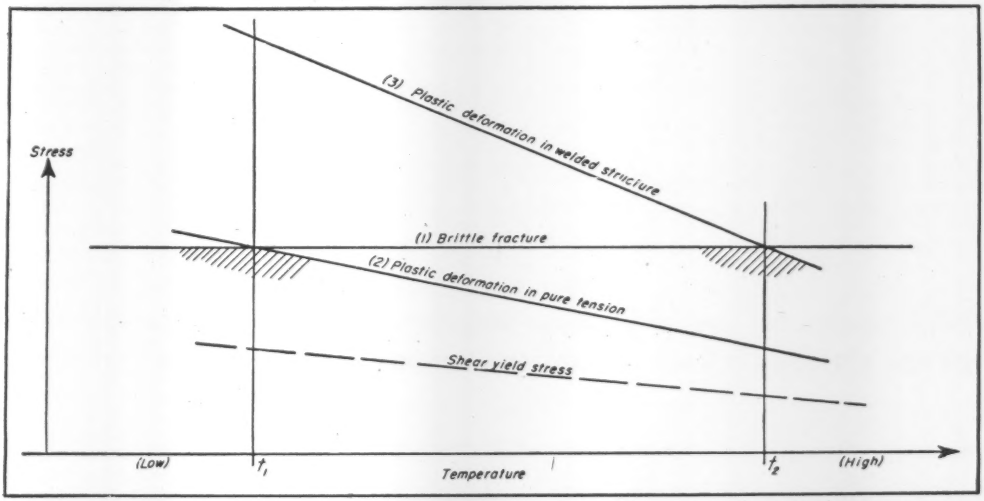

FIG. 4. TRANSITION TEMPERATURES for pure tension and for a welded structure are determined by the intersection of lines representing the tensile yield stress and the brittle strength.

In a welded structure, however, especially if thick plates are used, so that shrinkage in all directions is significantly impeded, high triaxial stresses will occur. Suppose the residual state of shrinkage stress at a certain point is given by the solid circle in Fig. 3. Here, the shrinkage stress in the longitudinal direction of the girder is assumed to be the maximum principal stress, and the other principal stresses are assumed to be equal. All three are tension stresses. If now, by application of dead and live load, the portion of the girder at the weld is subjected to additional tension, the maximum principal stress increases, while the other principal stresses remain constant. In this case, as shown by the dashed lines, the brittle-strength line may be reached first. Hence, at the same temperature, the steel will show a brittle fracture.

For simple tension (Fig. 2), plastic deformation occurs if the principal stress increases until it reaches the tensile yield stress, which is numerically equal to twice the shear yield stress. Brittle fracture occurs if the principal stress increases until it equals the brittle strength. For ductile steels, except possibly at very low temperatures, the tensile yield stress is always smaller than the brittle strength. Therefore, as the tension stress is increased, the tensile yield stress is reached and plastic deformation takes place before brittle fractures can occur.

The situation is different, however, if shrinkage stresses are present. Assume, for example, that in a welded structure at incipient fracture, the two smaller principal stresses are both equal to one-half the maximum principal stress. Then, maximum shear is numerically equal to one-fourth the maximum principal stress. Hence, plastic deformation occurs if the maximum principal stress increases until it reaches a value four times the shear yield stress. The tensile yield stress is now twice as large as it was for simple tension, while the brittle strength remained unchanged. Consequently, as the tension increases, the brittle strength may be reached before the tensile yield stress, in which case brittle fracture may occur without plastic deformation. This possibility is enhanced by low temperatures.

• **Effect of temperature**—Fig. 4 gives a graphical presentation of the varia-

tion of the limiting stresses with temperature. As was stated by E. Orowan ("Fracture and Notch Brittleness in Ductile Metals," Cambridge University conference, Oct. 26, 1945), the brittle strength does not change appreciably and certainly does not decrease with decreasing temperature. This condition is represented by line (1). On the other hand, the yield stress rises with falling temperature.

Hence, in Fig. 4, where, for pure tension, the maximum principal tensile stress is limited by lines (1) and (2), brittle fracture occurs at temperatures below the pertinent transition temperature t_t, while plastic deformation occurs at higher than t_t.

For a welded structure with high triaxial stresses, however, the maximum principal stress is limited by the lines (1) and (3), the latter representing the condition that the tensile yield stress equals four times the shear yield stress. Hence, brittle fracture occurs up to much higher than t_t.

Thus, if two structures are made from the same steel, and one is practically free from residual stresses, while the other has rather high shrinkage stresses, they will behave differently. The transition temperature for the first will be very low, so that under practically any service temperature the steel will remain ductile. For the second, however, the transition temperature will be much higher; hence, when the actual service temperature is low, such as in cold winters, it may be below the transition temperature. If so, the steel in the second structure will tend to fracture in a brittle manner, without the possibility of high localized strains being made harmless by plastic deformation.

• **Welded plates should be thin**—In welded structures, shrinkage stresses are particularly high if thick plates are used, and therefore, brittle fractures are likely to occur at moderately low temperatures. The exact value of this temperature depends not only on the state of stress but also on the metallurgical properties of the steel. It is important to recognize, however, that under certain stress conditions, brittle fracture may occur in any steel, and that, therefore, only a combination of appropriate design and erection (to minimize shrinkage stresses) and of adequate steel quality (to maximize ductility) can safeguard against brittle fracture.

This has been recognized in Europe; e.g., in Belgium and Holland, where, after World War II, plate thicknesses of more than $\frac{5}{8}$ or 1 in. are generally avoided for welded structures, and killed steel is used exclusively. Furthermore, several special requirements are imposed, which, for common structural steel (St. 37), limit percentages of carbon, phosphorus and sulfur to about 0.15%, 0.05% and 0.05%, respectively. If plate thicknesses of more than 1 in. have to be used, it is additionally required that, after welding, the structure be normalized to reduce residual stresses. Similar requirements are advanced here.

It is not possible to indicate the definite causes of collapse of the Duplessis Bridge pending conclusion of the investigation now under way. From the available data, it would seem, however, that a number of circumstances combined to produce failure by brittle fracture. Among these are the low temperature prevailing at the time, the apparently unsatisfactory type of steel which did not conform to the enumerated requirements, and the use of inadvisably thick plates with correspondingly high, unrelieved shrinkage stresses.

The preceding information on brittle fracture, here presented in much simplified form, is not new; it is known by many specialists in the field. In view of the failure of the Duplessis Bridge, a summary of this information is considered justified, for the benefit of the many engineers not familiar with this subject.

USBR seeks to avoid cost of importing riprap, studies other slope protection

High cost of riprap, which must often be shipped from distant sources to Great Plains dam projects is the cause of slope protection studies the U. S. Bureau of Reclamation is making on Bonny Dam in the Missouri Basin. Freight costs alone, for riprap materials on the $16,500,000 earthfill structure, will be near $1,000,000.

It is estimated that rock riprap for some 16 dams proposed for construction in the lower Platte River area could cost nearly $55,000,000, largely because of the long haul distances.

Bonny Dam is on the Republican River in eastern Colorado. It is completed but for the slope paving and minor items of cleanup.

Half of a test section on the dam's upstream slope will be protected by an asphaltic concrete blanket of varying thickness; the rest will have soil-cement paving. Herbert E. Prater, regional engineer for USBR in the area, feels these two materials show promise of affording the necessary embankment protection at reasonable cost, and are adaptable to a wide variety of construction methods.

A spot has been selected on the reservoir where the test installation will be subjected to wind and wave action, fluctuating reservoir water surface level, freezing and thawing, and other rigorous service conditions. Regional engineers expect to gain full-scale performance records by which to determine the suitability and practicability of the tested materials as substitutes for rock riprap.

Because this part of the Missouri River Basin has a deficiency of rock suitable for use as riprap, it has been necessary to ship rock by rail to Bonny Dam from quarries near Golden, Colo. 180 miles away. The rail trip is followed by a truck haul amounting to 25 miles.

Built to control floods and bring 6,000 to 8,000 acres under irrigation, Bonny Dam is a 9,265-ft long earthfill, 160 ft high. Its 8,500,000 cu yd of fill were placed by the contractor, Utah Construction Co., as 99% of the work was completed in 54% of the allotted time.

IT TAKES A LOT OF RIPRAP to protect the upstream face of 9,265-ft long Bonny Dam. And hauling it from 200 miles away costs a lot of money.

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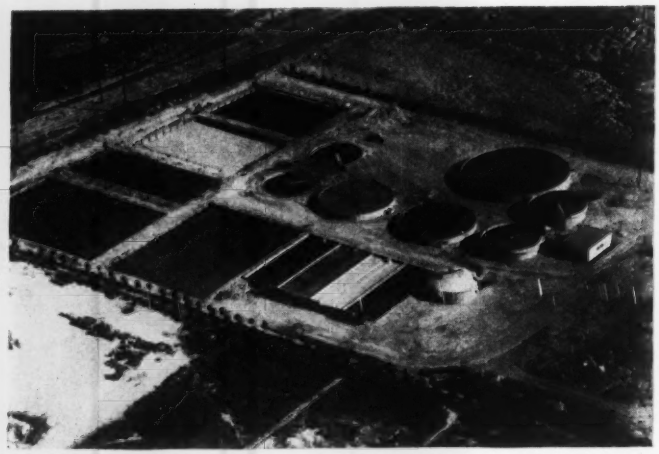


WASTE TREATMENT UNIT for southern California brewery is as large as many city sewage treatment plants. Effluent is added to underground water table by spreading ponds (left). Plant includes (right to left) primary clarifiers, primary (small) and secondary (large) bio-filters, and secondary clarifiers; sludge digester and drying beds.

Brewery builds waste plant; flow is larger than city's

Boyd E. Guymon
Sanitary Engineer
Holmes & Narver, Engineers
Los Angeles, Calif.

SOME 670,000 gal of liquid wastes are treated daily and then added to the underground water table by a large new brewery waste treatment plant at Azuza, Calif.

Engineers of the Lucky Lager Brewing Co. found the brewery's volume of effluent is greater than the sanitary flow of the town. The elaborate disposal setup was needed because there was no available large receiving body of water.

The plant just completed is the final step of a two-phase development. First step, completed in 1949, was aimed at producing 300,000 bbl of beer a year. Practically as soon as this plant went into operation, work was started on a second increment of similar capacity.

• **Dry land location** – The town of Azuza is located 15 miles east of Los Angeles, 20 miles from the Pacific Ocean. It is near the San Gabriel River, a typical southwestern stream that flows only during times of heavy rainfall. Further, much of the water supply for industry and agriculture in this area comes from underground aquifers. Discharge of waste directly to these aquifers could result in their pollution.

The brewing process at Azuza was carefully worked out based on experience at other Lucky Lager plants. Two phases of this careful design benefitted the waste treatment plant. First of all, only 10.5 bbl of water was required to produce a barrel of beer. This compares with the national average of 15 bbl of water. Secondly, waste grains were removed in the brewing process more thoroughly than is usual. These grains are sold for livestock feed and other purposes. This has the effect of reducing both the suspended solids and BOD in the brewery waste. (In brewery wastes both of these factors are normally quite high, however.)

With these considerations in mind and based on effluent characteristics at other Lucky Lager breweries, the waste-treatment plant was designed for the first increment. When time for expansion came, it was found that the design had been relatively successful. Flow was 335,000 gpd as compared with the assumed 310,000 gpd. Actual BOD and suspended solids were likewise close to design figures. Further, excess sludge digestion capacity was available so no new digesters were built for the second increment.

Another interesting phase of the work is that the waste treatment plant had to be maintained in operation during construction of the second increment of the plant. This required careful scheduling of construction operations so no units of the original plant were out of service at any time.

Henry R. Henius is supervising brewmaster for the Luck Lager Brewery Co. Ruben Schneider is brewmaster for the Azuza brewery. The new brewery was designed by Meyer & Evers, San Francisco architects. The waste treatment facilities were designed by Holmes & Narver, Inc., Los Angeles.

DATA SHEET FOR LUCKY LAGER WASTE TREATMENT PLANT AZUZA, CALIF.

Raw waste characteristics: 450-ppm BOD, 250-ppm suspended solids. 335 mgd flow, original plant construction. 670 mgd flow now. 1,350 mgd ultimate flow.

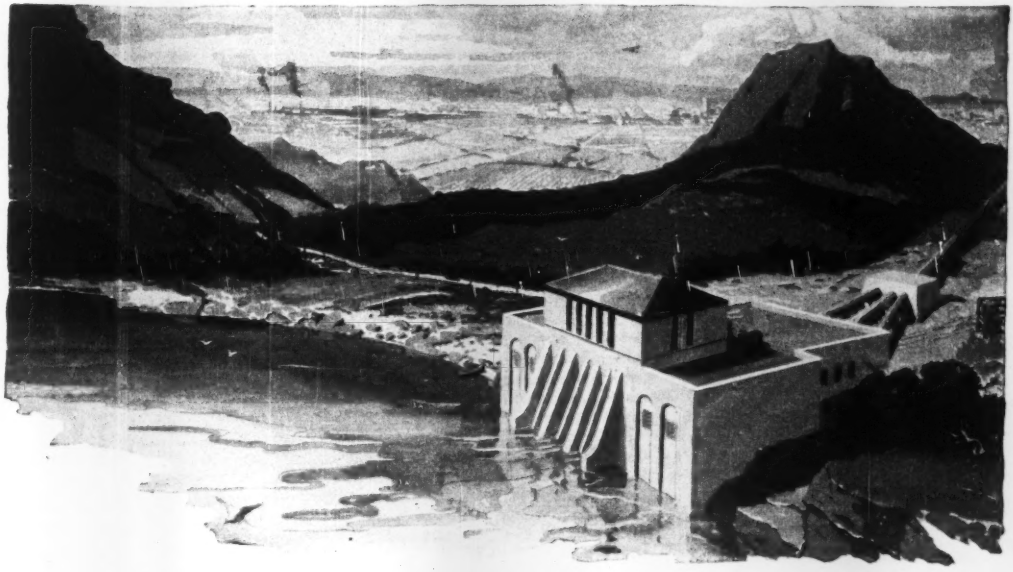
Treatment process: Two-stage bio-filtration with primary and secondary sedimentation; separate, single-stage sludge digestion; effluent disposal by spreading ponds to underground gravel beds.

Sedimentation: Two 40-ft dia, 10-ft swd primary units with continuous circular sludge collectors. Two 40-ft dia, 10-ft swd secondary units. Overflow rate varies from 365 to 730 gal/sq ft/day, depending upon raw waste pumping operations.

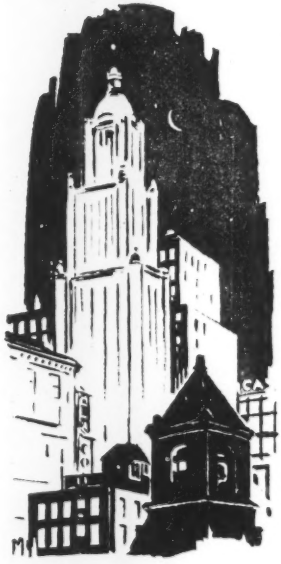
Bio-filters: Two 60-ft dia units with 3-ft rock depth for primary, one 85-ft dia unit with 6-ft rock depth for secondary. Average dosing rate for primary filters is 16.75 mg/acre/day. Secondary filter dosing rate is optional at 10 mg or 13.5 mg/acre/day.

Sludge digestion: One 35-ft dia, 20-ft swd sludge digester equipped with vertical-pipe heat exchangers and 7,500-gpm circulating pumping mechanism. Cover is of the fixed-dome type, gas is collected and used for heating digester contents.

Spreading ponds: Five separate spreading ponds of non-uniform size and shape have a total combined area of slightly less than one acre. Multiple beds permit resting, drying and cleaning. Floors of beds consist of a 4-in thick layer of sand which tends to prevent clogging of the natural tightly packed gravelly subsoil.



WHEN Millions Live As One



ADVENTURESOME folk, since the beginning of time, have migrated . . . Settling in tiny clusters . . . Spreading spider-web fashion to dot the land with villages and towns . . . While others pressed forward, facing dangers concealed behind each rock and tree!

But with the growth of cities, new perils arose and multiplied . . . People were living too closely together . . . Epidemics and pestilence exacted their toll . . .

Then science and modern machinery rescued them from exposure to disease emanating from impure water and unsanitary waste disposal . . . And, today, *millions live as one!*

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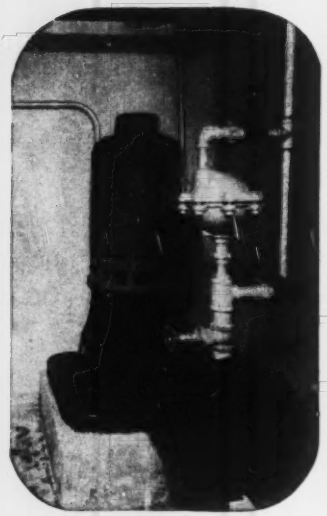

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In 1938, Layne installed twenty-five top performing well water units to give Wichita 48 million gallons of water daily,—enough, so city officials estimated for all needs until 1960. Then came World War II and Wichita gained many new industries and a big growth in population. The demand for water quickly became greater than the supply.

Layne was called in and given a contract for seventeen new wells to be completed without delay. Layne crews swung into action and drilled the wells, set casing, sand screens and pumps. Including testing time, a new well was completed every nine days until all seventeen were in service—increasing Wichita's total supply to 62½ million gallons daily, making this city the second largest municipal ground water user in the Nation.

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READER COMMENT

Pollution Abatement

Sir: I wish to vigorously protest the editorial "Reconsider Pollution Abatement?" in the March 22 issue. I am unable to fathom the reasons which led to such a viewpoint.

Your editorial tends to undo all the constructive work thus far accomplished, and that now under way, by the county, state, inter-state and federal agencies for stream improvement.

It has taken many years of continuous effort to get the municipality to concede that it does not have either a moral or legal right to discharge untreated sewage into its downstream neighbor's water intake; to bring into public focus the fact that our water courses are so badly polluted today as to minimize their value as recreational assets; and to get industry to acknowledge the fact that industrial waste treatment is necessary and is a part of manufacturing costs.

One questions whether the national emergency to which you refer exists in the proportions which you imply. But this is a matter of personal opinion which is pointless to argue. It seems however that if the emergency has extreme urgency, your editorial efforts can be put to more fruitful use in ascertaining and pointing out the real reasons why bricklaying has risen in costs to 200 odd dollars per thousand, why bricklaying per man has dropped from 800-1000 to 200-300, why the bending of reinforcing bars or the laying of cast iron pipe requires "skilled labor," why reinforcing bars cannot be factory cut and factory bent, and why the cost of reinforced concrete in place has almost doubled within the past two years.

There are dozens of firms engaged in the manufacture of equipment employed in sewage and industrial waste treatment plants. Have defense orders taken their normal output, or has the demand for essential war goods been sufficient for them to retool and manufacture items for national defense? The most casual inquiry will elicit the answer, "No."

Until national conditions and the concerned federal agencies indicate such stringencies, it would seem that your editorial has jumped the gun—and plenty.

In closing may I paraphrase the last two paragraphs of another editorial of the same issue of ENR entitled "Responsibility Needed."

"Viewed lightly (as it should not be) your act is one of childish bad manners. Viewed seriously it is mutiny that can harm both the general interest and the cause of pollution abatement."

"Let us hope that ENR can editorially regain sight of the objective, 'responsibility in the general interest.' We'd like to believe that ENR can become qualified to give unselfish help to all."

I have every respect for your valued contributions to the field of engineering and the public good, and I trust that a reconsideration of your editorial may lead to some corrective statement. After all, none of us are immune to errors of judgment, and the most essential feature of the lead pencil is still the eraser.

THOMAS M. RIDDICK
Consulting Engineer and Chemist
New York, N. Y.

EDITOR'S NOTE: "Responsibility in the general interest" is what the editorial was about—but a general interest embracing the national welfare in an emergency as opposed to the long-time public welfare that Mr. Riddick discusses, and which we support as enthusiastically as he does. As a matter of fact the editorial was principally focused on the danger to the pollution abatement program in trying to push it at full throttle against the defense-effort current. If there is no national emergency, then the editorial has no point, but we can't be as confident on that score as Mr. Riddick seems to be.

Backfilling felled that wall

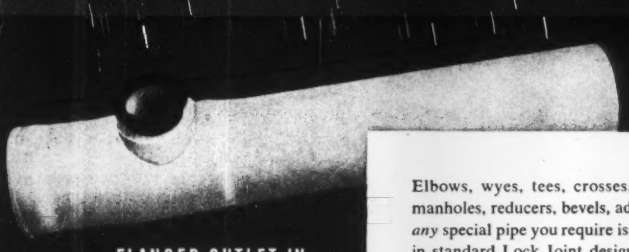
Sir: In your Feb. 8, 1951 issue (p 51) there is an article about the failure of a retaining wall.

It is my opinion that failure was caused entirely by improper backfilling. An investigation would show, I believe, that after the wall was built, the fill was dumped in and permitted to slide down against the wall. Later settling of the fill then worked as a wedge and pushed the wall over. The wedge was formed because the face of the wall was plumb, and the top is thinner than the base.

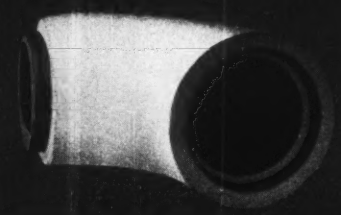
Collapse could have been eliminated by building in steps on the back of the wall and keeping fill level as it is placed. Then, as the fill settles, there is no crowding action. The steps would hold all the weight, and would have the added advantage of providing additional strength—instead of producing a weakness.

B. N. BEARD
Shelton, Conn.

"Specials" are a Specialty of LOCK JOINT...



FLANGED OUTLET IN FULL LENGTH PIPE



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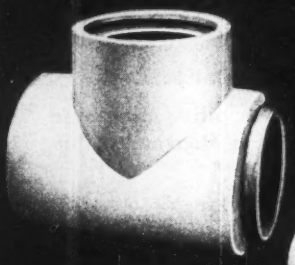

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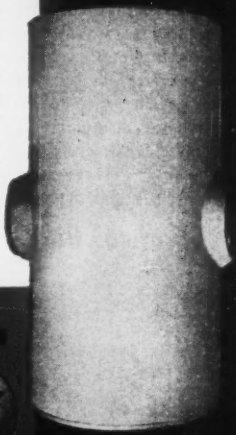
Elbows, wyes, tees, crosses, outlets, manholes, reducers, bevels, adaptors... *any* special pipe you require is available in standard Lock Joint design. And if standard specials won't do the job, "special" specials may be designed to individual specifications. Lock Joint Concrete Pressure Pipe can be connected swiftly and efficiently to any standard water pipe of other material. All specials are engineered with the same care and high safety factor that have made Lock Joint the pipe of unexcelled durability and dependability.

ADAPTORS— LOCK JOINT TO CAST IRON PIPE



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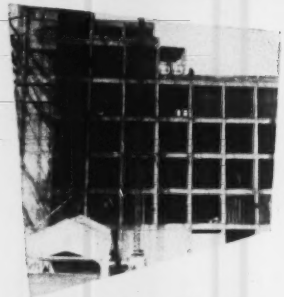

NORTH of the border

Both the Vancouver Interstate Brewery, British Columbia (above), and Panama City's Hotel Panama (below), were built of DAREX AEA concrete. In heavily reinforced concrete columns and slabs such as these, DAREX AEA makes possible easy placement with unusually low water-cement ratios. DAREX AEA results in a quality concrete that is free from honeycombing, gravel pockets and sand streaking . . . a durable concrete that is more impervious to water, affords better protection to steel, is more resistant to weathering.

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DAREX *AEA* is the only catalyzed air entraining agent specifically formulated for making air entrained concrete.

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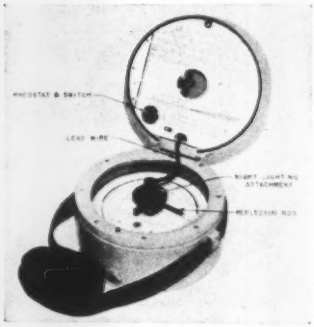
FIELD AND OFFICE

Pontoon tide gate

Buoyancy of gate permits it to open under a 2-in. differential head. Designed for use in controlling discharge of waste from sewage systems during periods of storm flows, the Pontoon tide gate was developed by the City of New York, Department of Public Works, and the Krajewski-Pesant Mfg. Corp. Wall casting and frame are made from high-test cast iron, while flaps are constructed from Byers wrought-iron plates and membranes making a multiple number of watertight compartments continuously welded inside and outside from $\frac{3}{8}$-in. thick plates. These have finely machined facing strips that seal against 1¼-in.-sq rubber seating strips in dovetailed grooves.



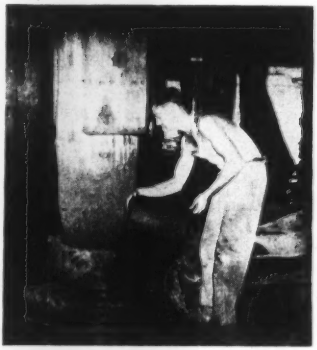
Surveying altimeter

A surveying altimeter that measures elevations with an accuracy of approximately two feet has been designed and tested by the Army's Engineer Research & Development Laboratories.

This instrument is an aneroid-type barometric-leveling device for use from 1,000 feet below to 15,000 feet above sea level. It has a single vacuum chamber that expands and contracts in response to changes in atmospheric pressure, causing rotation of the indicating hand.

A lighting attachment for night operation is mounted in a rotatable socket that directs the beam of light. The lid houses a conversion and correction chart, a rheostat and switch, a reading glass, a sling psychrometer, a screw driver, a spanner wrench, the lighting attachment when not in use, and two batteries.

Engineering tests performed at Fort Belvoir, Va., indicate that the majority of the elevations established were correct within 2 feet when proper observing techniques were employed utilizing the two-base method.



Pier piling creosoted by a floating collar

Simple method for applying creosote to piling has resulted in savings of $92,000 a year at Sydney, Australia. It features the use of a floating collar, and has reduced the incidence of destructive marine borers (sphaeroma and limnoria) from as high as 80% (in 1927) to 5%—or a point where it ceases to be an economic threat. The collar is the brain child of Roy Austin Johnson who observed that the borers operated only over that section of the pile affected by high and low-tide.

Creosote, which is lighter than water, is held within the floating cylinder as it rises and falls with the tide. This causes a film of creosote to form on the pile. Treatment is carried on for 24 hr, and is said to be effective for a minimum of 12 months. The collar is 4 ft high and has a 24-in. dia. It can be uncoupled and moved to another pile in 5 min.

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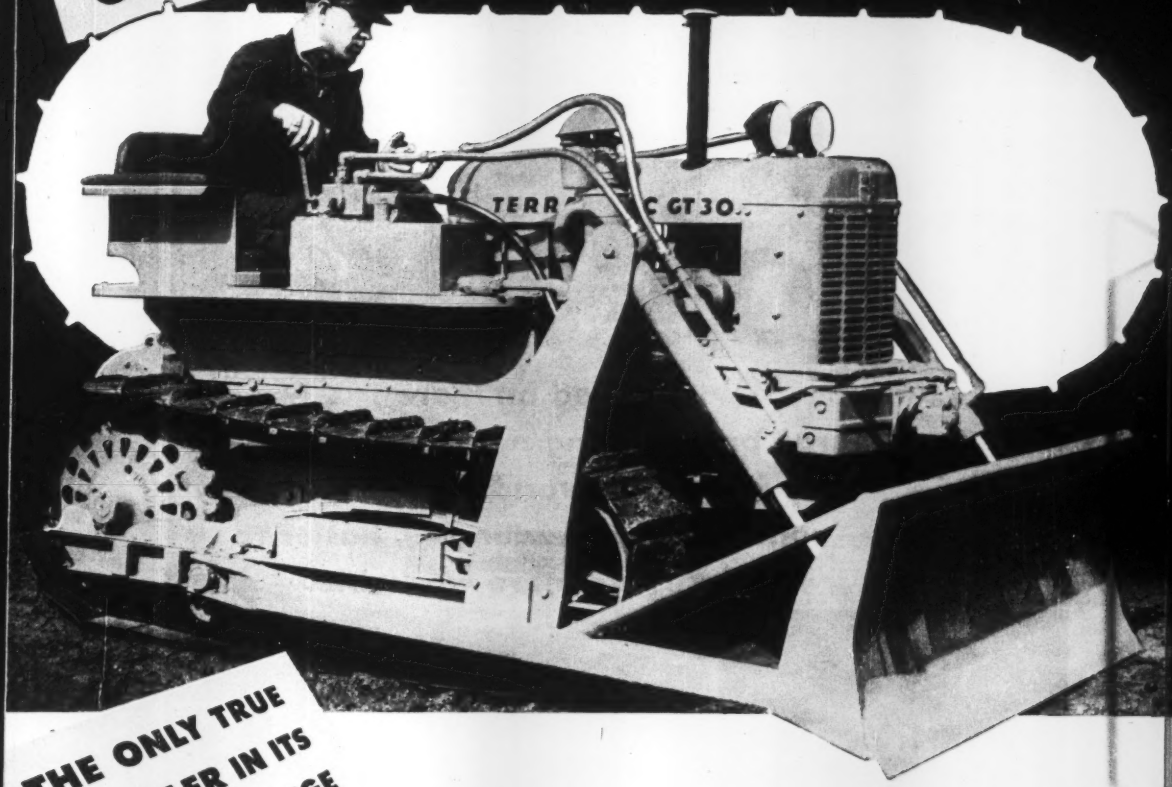

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POWERFUL . . . newest Continental 140 cu. in. engine.

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VERSATILE . . . easy handling of loaders (½ cu. yard), bulldozers, angle dozers, winches, back hoes, scrapers.

COMPARE the GT 30 feature for feature with crawlers twice its price.

COMFORT . . . note the wide arm rest, upholstered seat, conveniently located controls, full visibility from all sides and plenty of leg space, well guarded.

TERRATRAC has many extras . . . high clearance, 3 point hydraulic lift, interchangeable rubber and steel track shoes and variable gauge widths.

A GREAT WORKER
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AMERICAN TRACTOR CORPORATION

TERRATRAC ATC

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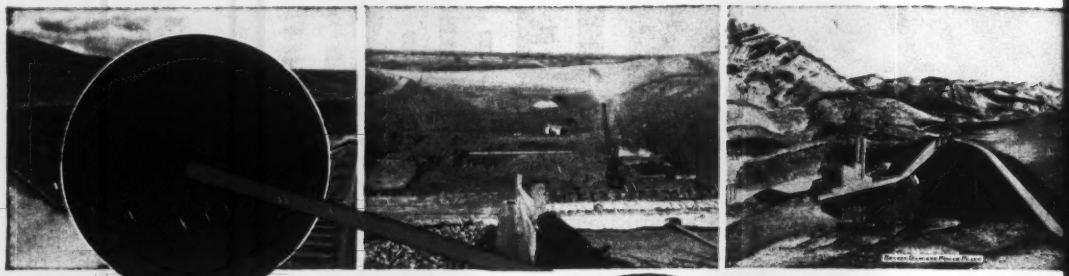

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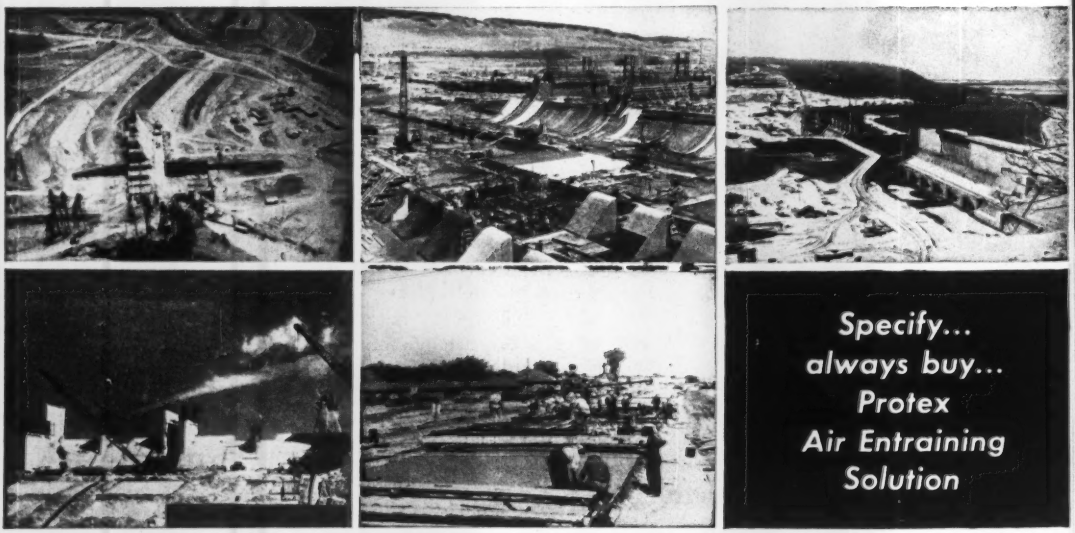
America's leading air entraining solution

is used on more large projects (and many smaller ones) throughout the world, because Protex concrete is more durable, easier to place and more workable.



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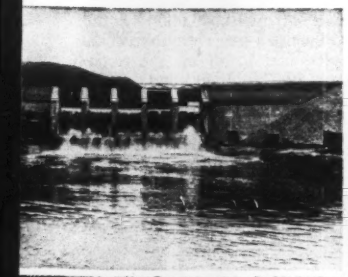

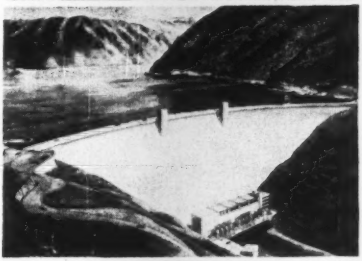

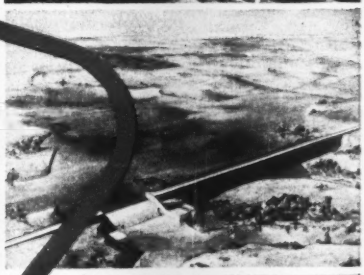

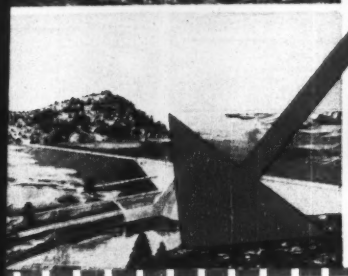

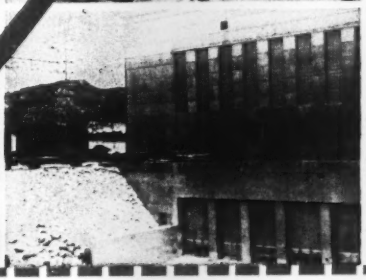

This is a partial list of Protex projects:

Morrison Knudsen Co., Inc.,
Shoshone, Wyo.
Boysen Dam, U. S. Bureau of Rec.

Johnson-Wesslen Kiewit, Contractors,
Fort Gibson, Okla.
Fort Gibson Dam (490,000 yds.)
U. S. Corps of Engineers

Morlan Construction Co., Alma, Nebr.
Morlan County Dam (430,000 yds.)
U. S. Corps of Engineers

Al Johnson Construction Co.,
Denver, Colo.
Cherry Creek Dam
U. S. Corps of Engineers

Lytle-Amis Construction Co.,
Cambridge, Nebr.
Medicine Creek Dam
U. S. Bureau of Rec.

Hubert H. Everist, Sr. Contractor,
Westley, Calif.
Delta Mendota Canal
U. S. Bureau of Rec.

Morrison Construction Co. Tuttahook, La.
Pearl River Lock No. 1
U. S. Corps of Engineers

McNary Dam Contractors
Plymouth, Wash.
McNary Dam (750,000 yds.)
U. S. Corps of Engineers

Mistry Brothers Construction Co.,
Hulah, Okla.
Hulah Dam, U. S. Corps of Engineers

Peter Kiewit & Morrison-Knudsen,
Estes Park, Colo.
Colorado Big Thompson Project,
U. S. Bureau of Rec.

Lytle & Green Construction Co.,
Glen Ullin, N. D.
Heart Butte Dam, U. S. Bureau of Rec.

T. L. James & Co., Bush, La.
Pearl River Lock No. 2
U. S. Corps of Engineers

Peter Kiewit & Sons Co., Fresno, Calif.
Friant Kern Canal
U. S. Bureau of Rec.

Dorena Construction Co.
Cottage Grove, Ore.
Dorena Dam, U. S. Corps of Engineers

Guy Atkinson Co., Inc.,
Walla Walla, Wash.
Mill Creek Project
U. S. Corps of Engineers

Utah Construction Co.,
Hot Springs, S. D.
Angostura Dam
U. S. Bureau of Rec.

Morrison Knudsen Co. Inc.,
Casper, Wyo.
Kortes Dam, U. S. Bureau of Rec.

Guy Atkinson & J. A. Jones Cons. Co.,
Hanford, Wash.
U. S. Atomic Energy Plant
U. S. Corps of Engineers

Morrison Knudsen & M. M. Hasler,
Tracey, Calif.
Delta Mendota Canal
U. S. Bureau of Rec.

Condon Bress-Bevanda,
Estes Park, Colo.
Estes Park Dam, U. S. Bureau of Rec.

A. L. Alley & Son, Contractor,
Pickstown, S. D.
Fort Randall Dam (spoiling work),
U. S. Corps of Engineers

Adler Construction Co., Madras, Ore.
Dickinson Dam, U. S. Bureau of Rec.

Horner & Switzer Construction Co.,
Hale, Colo.
Bonney Dam, U. S. Bureau of Rec.

Young & Smith Construction Co.,
Phoenix, Colo.
Peonia Dam, U. S. Bureau of Rec.

S. B. M. U. Co., Hot Springs, Ark.
Bailey Mountain Tunnel,
U. S. Corps of Engineers

U. S. Engineers, Fort Peck Dam

McCarthy Improvement Co.,
Pickstown, S. D.
Fort Randall Dam,
U. S. Corps of Engineers

Al Johnson Construction Co.,
Pickstown, S. D.
Fort Randall Dam
U. S. Corps of Engineers

Silas Mason Co., Pickstown, S. D.
Fort Randall Dam,
U. S. Corps of Engineers

S. A. Healy, Riverdale, N. D.
Garrison Dam
U. S. Corps of Engineers

Adler Construction Co.,
Dickinson, N. D.
Dickinson Dam, U. S. Bureau of Rec.

Peter Kiewit & Morrison-Knudsen,
Riverdale, N. D.
Garrison Dam
U. S. Corps of Engineers

Hamilton, Williams & Noonan,
Beaumont, Texas
Neches River Dam
U. S. Corps of Engineers

Consolidated Builders, Inc.,
Mill City, Ore.
Detroit Dam,
U. S. Corps of Engineers

T. L. James Co. Contractors,
Fort Worth, Texas
Fort Worth International Air Port

General Shea Morrison,
Hungry Horse, Mont.
Hungry Horse Dam (2,100,000 yds.)
U. S. Bureau of Rec.

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FOREIGN

New Brazilian road partly out of service

Bad weather, imperfect materials and poor grade preparation are said to have combined to put out of service approximately 10 percent of the new Rodovia Presidente Dutra which was opened in January between the cities of Rio de Janeiro and Sao Paulo.

Surfacing has broken at many points, due to poor quality of coal tar supplied by the National Steel-works at Volta Redonda. Tests have shown that while 85 percent of the tar supplied from that source was satisfactory the remainder was substandard. In all, Volta Redonda supplied 14,000 metric tons of coal tar while 6,000 metric tons of asphalt was imported.

Excessive volatility of the poor Volta Redonda product, plus heavy rains interspersed with excessive heat, caused innumerable break-ups in the surfacing.

Meanwhile, on several stretches the subsurface has proved incapable of supporting the weight of the fill. Settling has caused detours at many points, especially where bridge approaches have fallen below necessary levels.

Repair work is under way at all points.

Foreign briefs

Modern roads for Turkey—A network of modern roads is spreading out over Turkey with the help of Marshall Plan dollars. Under a 3-year program the Turkish government is building or improving more than 3,900 miles of roads, tying inland cities to seaports and breaking trails into formerly isolated areas for mineral and agricultural development.

New career for Army dredge—The 2,700-ton sea-going dredge "Manhattan" has been reconditioned and will climax 47 years of service with the U. S. Army Corps of Engineers by beginning a new career which will take her to Thailand as a part of U. S. aid to strengthen that country's trade and commerce. The port of Bangkok is to be dredged to a depth of 28 ft, permitting the berthing of ocean-going vessels. For the International Bank, Ralph F. Rhodes, consulting engineer of Savannah, Ga., has left for Bangkok in connection with the proposed improvements of the harbor there.

Neapolitan public works—A feature of the 10-year reconstruction plan to be carried out by the recently-created South Italy fund provides for an expenditure of $170,000,000 by the state to finance a series of public works in Naples, first of all for the reconstruction of buildings and public works destroyed or injured by war operations. Among the more important works are new warehouses for the free port, a large drydock, enlargement of railway connections, and the provision for 60,000 low-cost housing units.

Health specialists to Asia—A total of 80 American medical and health specialists have been made available to the Economic Cooperation Administration for one to two-year assignments in Southeast Asia—Indo China, Thailand, Burma, and Indonesia. The Americans will work with local health authorities through the agencies already established by the governments of those countries to serve a 136,000,000 population.

French study our steel methods—The French iron and steel industry has sent 13 specialists to this country to study American production. They are observing the efficient methods, organization and engineering which have given the American iron and steel industry its high productivity—an output per man-hour four times that so far attained in France.

Britain at home to the world in its 1951 Festival

The former bombed area on the south side of the Thames, between Westminster and Waterloo Bridge, has been laid out with new buildings and terraces as an exhibition ground along the river front. How it looks is shown by the accompanying pictures. This exhibition will tell the story of the British people at work and at play—in industry, transport, agriculture, at home and on the seas, and in those boundless fields of exploration and discovery in which British scientists are helping to build the world of tomorrow when there may be peace and no "austerity."

INSIDE THE DOME—This is a view of the Dome of Discovery showing the roof structure just prior to its being covered with aluminum sheeting.

FESTIVAL OF BRITAIN—From May to September, the Festival of Britain on the South Bank of the Thames at London will be in full swing. Here is an artist's impression of the finished site of the main feature of the festival, showing (foreground) the Dome of Discovery with (left) a 290-ft monumental pointer which will be illuminated from the inside at night. To the other side of the first bridge (Hungerford) is the Concert Hall, and beyond that a shot tower, used during the Napoleonic wars to make round lead shot, and fitted now to support the aerial of a radio telescope capable of bouncing radio waves off the moon. Beyond the shot tower is Waterloo Bridge and in the background St. Paul's Cathedral. More than 20 British cities are Festival centers and more than 1,600 towns and villages in England, Scotland, Wales and Northern Ireland are scheduling Festival programs—Eastern Pubs. photo.

Work-ability proved with every yard moved

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SPECIAL SCRAPER ROPE

Long Lay, with Independent Wire Rope Core

1/2" or 9/16"

On your scraper the *cable* has a lot to say about *control*—control of the cut, yardage per load, round trips per hour, cost per job. To follow through on these opportunities for fast, economical production, see that *Preformed* Yellow Strand Special Scraper Rope goes aboard each earthmoving machine.

The operator gets *accurate* response with this smooth-running cable. It's limbered to take short bends and sudden shocks . . . to spool evenly . . . to handle safely when the line is shifted. Special lubrication equips the rope for rugged wear and exposure.

Your B & B distributor will gladly work with you to standardize on *Preformed* Yellow Strand Special Scraper Rope and to maintain a balanced supply of spares. See him, too, for long-lived hoist and drag lines.

Broderick & Bascom Rope Co., St. Louis 15, Mo.

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"AMERICAN TUBULAR"

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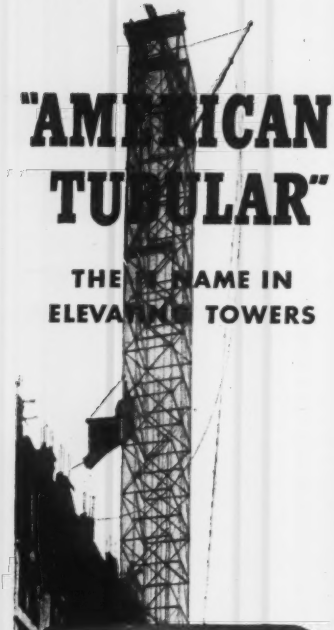

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HEAVY	5000#	UNLIMITED	1 cu. yd.
LIGHT	2000#	201 ft.	½ cu. yd.

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NEW-Lightweight low-cost, panel-type PT Towers. Send for descriptive brochure.

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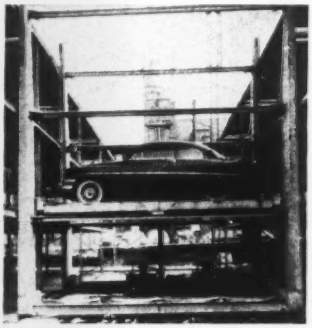
Division of UNIVERSAL MANUFACTURING CORP.

MUNICIPAL

Still more traffic problems

As usual, traffic continues to be the big municipal headache. Here are some late developments around the country.

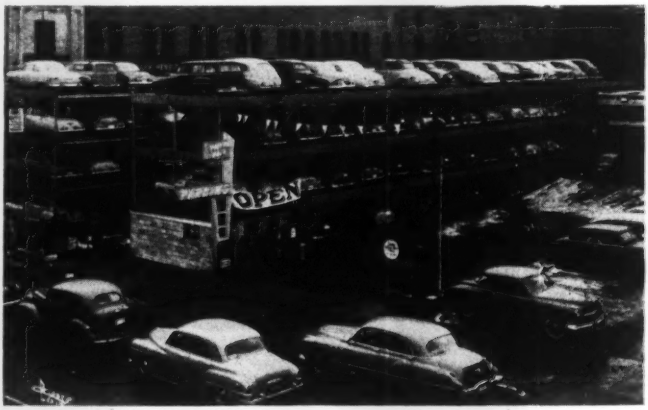
Wilmington, Del.—Purchase and development by the city of two parking sites at an estimated cost of from $800,000 to $1,000,000 for 6,000 automobiles in the area east and west of Market Street, between Fourth and Seventh Streets, in the central city area has been recommended by the Wilmington Planning Commission. The commission believes that parking should be limited to a 3-hour maximum. The commission also approved recommendations to grant the city authority to establish off-street market and parking facilities for the Farmers' Market now located on King Street.



MOBILE ELEVATOR—A car is delivered to one of the ground floor stalls and the electric transfer carriage places the car on the parker, which rolls down the center corridor on rails, and is lifted to the proper level. G-E motors provide the power.

Columbus, Ohio—City council has authorized a $4,000,000 bond issue for off-street parking facilities, in a move designed to initiate a test in the Ohio Supreme Court of the state-enabling legislation. The bond issue will be refused by City Auditor R. P. Barthalow, and a mandamus suit brought against him to compel him to issue the bonds. The bond issue would provide for 4,500 off-street parking spaces, according to William R. Morris, chairman of the Columbus Parking Commission. Private engineers are now making a survey and preparing plans, with private funds.

Bonds for parking—Bills giving North Carolina cities authority to issue bonds to provide off-street parking facilities were introduced into the North Carolina legislature Feb. 23 with the backing of the North Carolina League of Municipalities. The measures would give municipalities power to levy assessments and to use parking meter proceeds and fees collected to pay off bonds for the purpose. Authority to use condemnation proceedings if necessary to obtain property for parking purposes also would be granted. Special assessments



"PIGEON HOLE" PARKING—This two-row, four tier structure at Spokane, Wash., accommodates 142 cars. A G-E 30-hp open main hoist motor powers the mobile elevator, which picks up the car, rolls down the center corridor on rails, lifts the car to the proper level and deposits it in the desired pigeon hole. The hydraulic hoist-lift combination was constructed by the Peters Co., engineers, fabricators and manufacturers, of Portland, Ore. The installation was designed and is operated by Vaughn and Lea Sanders of Spokane under the name of Pigeon Hole Parking, Inc.

to provide revenues for paying of the bonds could be levied against the owners of property benefiting from establishment of the parking facilities.

Seattle, Wash.—City council has delayed action until May 14 on the proposal of City Engineer R. W. Finke to limit two streets through the central business district to one-way traffic. Opponents of the plan asked the delay in order to draw up a possible alternate plan. Some of the strongest opposition came from the Seattle Transit System, which declared the changeover would cost it $100,000.

Chicago, Ill.—A fanciful plan to park 8,464 of the cars which enter the Chicago Loop area daily has been devised by a member of the "Chicago Daily News" Staff, who has visualized a parking area above the Chicago River. The parking ramp would extend from Madison Street, on the south branch of the river around to the Outer Drive bridge, where the river meets the lake. The ramp would be one and three-eighths miles in length, 205 ft in width and, provided a vertical lift were used, would accommodate the 8,464 cars. The city would charge parking tolls to liquidate construction costs. It is contended that the air rights over the river belong to the city. Owners of abutting property must file suits for damages. The ramp would be high enough not to interfere with navigation.

Phoenix, Ariz.—A $3,000,000 combination underground garage and department store is to be built here. It will be the property of the city with Landrum and Mills Realty Co., the leasors. The company will construct the building and pay the city $30,000 annually over the next 50 years for lease of the city-owned land. Building priority is requested from NPA on the basis that the garage could be used as a bomb shelter. Landrum & Mills will lease the two-story department store to J. C. Penney Co. Inc., for 3% of net retail sales, or $60,000 annually.

The three-story, 437-car garage will be rented by System Auto Parks & Garages, Inc., of Los Angeles. The lease is for $50,000 per year or a percentage of receipts, whichever is higher. The garage will pay 50% of gross parking fees, one cent per gallon on gas sold on the premises, five cents for each quart of oil, 5% of gross sales of tires, accessories, specialties or parts, and 10% of all gross from washing, lubricating, greasing, and miscellaneous service or goods.

The parking area will be used by the public but Penney's may work out a customer service at either reduced rates or no charge. Milton Anderson of Los Angeles is the architect.

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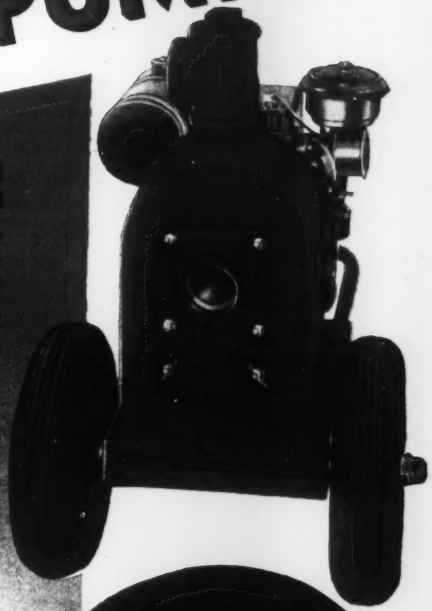
McGOWAN PUMPS



These rugged McGOWAN all welded steel pumps are lighter, yet stronger, more durable than any you've ever seen. Now in operation in Oil Fields throughout the world. They feature — automatic priming • non-clogging impeller hard-faced wear plates • large access plates • tested and trouble free shaft seals.

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Long life service means extra economy! McGowan Pumps have been serving the Industry since 1852. See your Supply Co. or write today for catalog sheets, complete information.

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MEN AND JOBS

Highway departments

North Carolina highway workers entering the armed services, **M. B. Duncan**, **Howard Harrison**, **Gus Saparidas**, **Horace Jernigan**, and **Donald R. Walton**.

C. L. Ellington, acting Asst. Secondary roads engineer, Virginia.

D. D. Forgey, dist. engineer at Seattle, Wash. State Highway Dept.

D. W. Stehley, locating dept., 4th Div. N. C. Highway Commission at Wilson.

R. H. Albrecht, supt. of public works, Hamilton, N. Y., joins engineering dept. E. I. du Pont de Nemours Co., Wilmington, Del.

N. A. **Thomson**, Nacogdoches County engineer, Texas highway dept.

C. B. Patton, Jr., and **J. E. Higgins**, bridge dept., N. C. highway commission, Raleigh.

Changes, Illinois State Highway Dept., **V. L. Glover**, head Bureau of Administrative Service; **E. L. Sheretz**, engineer of design; **J. D. Lindsay**, head Bureau of Materials; **A. L. Kukral**, head urban expressways engineers.

Alabama highway dept., **W. G. Pruett**, director; **A. R. Harvey**, office engineer; **J. W. Hart**, head, planning survey; **G. W. Phillips**, maintenance engineer; **Marvin Taylor**, construction engineer; **S. W. Harbin**, survey and plans; **I. B. Rutledge**, engineer, county aid; **J. L. Land**, materials and tests; **J. W. Chambers**, bridge engineer; **G. R. Edwards**, equipment.

R. A. Haber, acting chief engineer, Delaware State Highway Dept.

The Wigton-Abbott Corp. engineers and contractors of Plainfield, N. J., has appointed James F. Smythe, former assistant to the head of design and construction for Ebasco Services, Inc., to the position of contracting engineer. A graduate of the University of Cincinnati, Mr. Smythe has been with Air Reduction Co., Chesapeake & Ohio Railway Co., State Highway Commission of Indiana and American Airlines. During World War II, he served as a Coast Artillery officer.

Government agencies

Brazos River Conservation and Reclamation Dist., Tex., board members, **J. H. Kultgen**, **G. C. Roane**, **H. J. Cureton, Jr.**, **Fred Brown**, **J. E. Ward**, **J. Secrut** and **W. H. Wilson**.

Guadalupe-Blanco River Authority, Tex., board members, **T. A. McDonald**, **H. A. Wagenfeuhr** and **V. E. Heard**.

Atomic Energy Commission, **W. R. Dickinson**, resident engineer, Idaho Falls, Idaho.

J. R. Barnes is in Washington, D. C. participating in the management and operation program of the Div. of Water and Power of the Dept. of the Interior.

Municipal and county

R. K. Genthner, public works supervisor, Canandaigua, N. Y.

T. C. Robinson, city engineer, Georgetown, S. C.

W. R. LaDue, civil defense director (water supply) Akron, Ohio.

A. E. Lloyd and **G. C. Love**, municipal public works dept., Durham, N. C. leaves granted for Army service.

W. A. Ward, Asst. city engineer, Rocky Mount, N. C.

J. S. Goodman, asst. city engineer, Wilson, N. C.

Edward Dunn, public health engineer, Winston- Salem, N. C.

Resignations

L. T. Keefe, dir. Toledo-Lucas County, Ohio, plan commission, to become planning engineer at Portland, Ore.

J. R. McKinney, Idaho commissioner of highways and public works, July 1.

E. P. Hale, public health engineer, Winston-Salem, N. C., to become partner in the Sta-Right Septic Tank Co.

Leonard G. Haeger, asst. dir. Div. of Housing Research, Housing and Home Finance Agency, to join staff of National Assn. of Home Builders.

M. C. Lorenz, asst. chief, Supply & Procurement div., St. Louis dist. Corps of Engineers, to become director, Processes div., Evaluation dept. U. S. Naval Civil Engineering Research and Evaluation Laboratory, Port Hueneme, Calif.

Benjamin Schwartz, dir. public works, Jamestown, N. Y., to work for the state.

C. A. Stoldt has taken over the high command of the Oklahoma state highway department, succeeding State Highway Director H. E. Bailey who resigned to become manager of the Turner Turnpike being constructed to link Oklahoma City and Tulsa. Stoldt, a civil engineer for 25 years, resigned as project manager of the Arnold engineering center being built at Tullahoma, Tenn., by the U. S. Army Corps of Engineers.

Retirements

L. M. Huggins, dist. engineer, U. S. Bureau of Public Roads, Boise, Idaho, 33 years.

C. L. Torey, secy.-treas., Brookfield Construction Co., Halifax, N. S. 50 years.

Robt. F. Olds, chief of Div. of Operations, in the office of the Div. Engineer, Corps of Engineers, Dept. of Army, Portland, Ore.

Business changes

A. Wilson Knecht, partner, Seelye, Stevenson & Value, consulting engineers, 101 Park Ave., New York 17, N. Y.

A. G. Wyatt and Associates have moved their offices to 406 Oak St., Columbus 15, Ohio.

Macklin and Stinson, architects and engineers, have removed their offices to 639-A West Fifth St., Winston-Salem, N. C.

Honors

David B. Steinman, bridge engineer has been awarded membership in the Society of Sigma Xi, national honorary scientific society. He also receives the Egleston Medal for 1951, having been chosen for the honor by the Columbia Engineering School Alumni Association.

Have you tried PUMPCRETE® on your B-V-D's?

Rex Pumpcrete has proved the lowest cost concrete placement method on hundreds of bridges, viaducts and dams. *For Example:*

BRIDGES Pouring bridge piers in mid-stream is a fine example of cost-cutting Pumpcrete use. Pipe line is run out and into the piers. No heavy road needed to support trucks. No danger of preparatory structures being "washed out." When one pier is completed, pipe is merely extended to the next one. It is also used to pour bridge deck.

VIADUCTS—Pumpcrete is usually ideal for viaduct work because it can handle the job without disrupting traffic and can pump to a height of 120', eliminating need for towers. Here it delivers concrete to a viaduct pier from location on the opposite side of a rail yard. Pipe is laid in a shallow trench under the tracks.

DAMS Time after time Pumpcrete proves to be the most economical method for pouring dams and spillways. Preparatory costs are held to a minimum, and a steady, large volume flow of concrete is assured. On this job a single pipe line and light cableway handled all concreting for a 500-foot spillway and multiple arch bridge above.

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Concrete is transported, elevated and placed in one operation. No buggying needed.

PUMPCRETE
REDUCES PREPARATORY COSTS

Pumpcrete and pipe line flexibility eliminate need for many access structures in road building and maintenance... trestling and scaffolding, etc.

PUMPCRETE
REDUCES "DEAD TIME"

Pumpcrete delivers concrete steadily... promotes smooth, steady job progress with no interference between various crews.

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No need to move mixing equipment from place to place. Pipe line placement permits spotting of Pumpcrete in the one best location for concrete placement.

Ask your local Rex Distributor to give you the details of the many advantages of concrete by pipe line. Or, if you prefer, write to Chain Belt Company, 1633 W. Bruce Street, Milwaukee 4, Wis.

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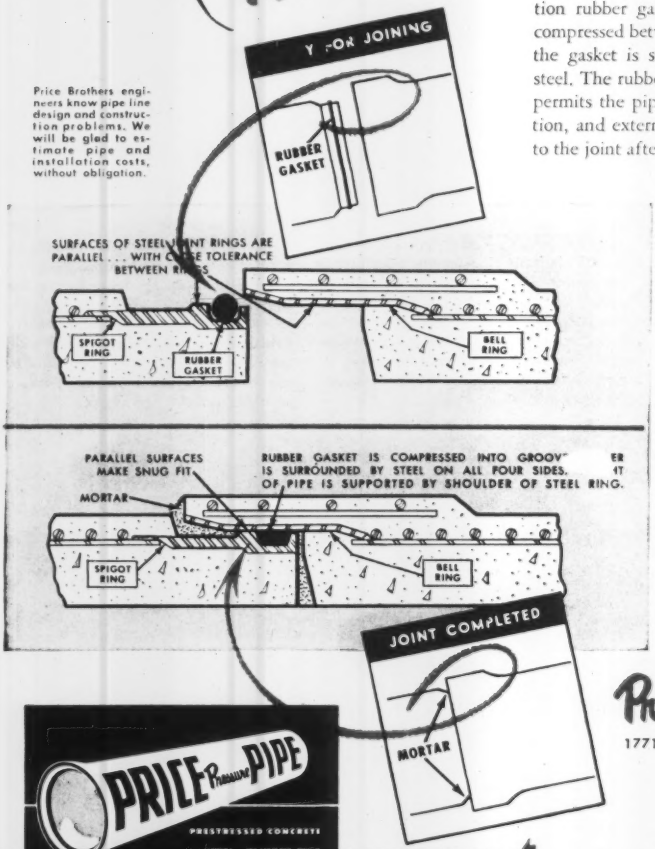
HOW Steel and Rubber MAKE A SELF-CENTERING, FLEXIBLE HIGH PRESSURE JOINT...

This rubber and steel joint has proven highly successful in high-pressure water lines. The spigot ring fits snugly inside the steel bell ring of the adjoining pipe. A special composition rubber gasket, recessed in the spigot ring, is tightly compressed between the two rings. When joint is completed, the gasket is surrounded on all four sides by zinc-coated steel. The rubber gasket maintains a flexible connection that permits the pipe to adjust to expansion, contraction, vibration, and external loads without leakage. Mortar is applied to the joint after pipe is laid.

Price Brothers engineers know pipe line design and construction problems. We will be glad to estimate pipe and installation costs, without obligation.


Y-TYPE JOINING
RUBBER GASKET
SURFACES OF STEEL JOINT RINGS ARE PARALLEL . . . WITH CLOSE TOLERANCE BETWEEN RINGS
SPIGOT RING
RUBBER GASKET
BELL RING
PARALLEL SURFACES MAKE SNUG FIT
RUBBER GASKET IS COMPRESSED INTO GROOVE IN SPIGOT RING. IT IS SURROUNDED BY STEEL ON ALL FOUR SIDES. END OF PIPE IS SUPPORTED BY SHOULDER OF STEEL RING.
MORTAR
SPIGOT RING
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JOINT COMPLETED
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PRESTRESSED CONCRETE STEEL-CYLINDER PIPE

Longest trouble-free service at lowest cost

Prestressed Pipe combines the strength of steel, the protection of concrete and the flexibility of a rubber joint to provide *a combination of advantages found in no other pipe.* It has a life expectancy of 100 years and more, highest carrying capacity, and water tightness under highest pressures. Its great structural strength provides safety from sudden and complete failure. It is easy to lay, easy to tap, and provides great flexibility in design.

Prestressed Concrete Steel-Cylinder Pipe is available in 16 foot lengths and in the following diameters: 16″, 20″, 24″, 30″, 36″, 42″, 48″ and larger.

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Send for these fact-packed booklets on Price Brothers Prestressed Concrete Steel-Cylinder Pipe.

Installing Price Brothers Prestressed Pipe on the 80-mile Saginaw-Midland project, one of America's longest high-pressure water supply lines. Pull shovel lays pipe and pushes joint together.

EDUCATION, RESEARCH

MIT to hold conference on prestressed concrete

Preliminary plans for a national conference on prestressed concrete, at the Massachusetts Institute of Technology from Aug. 14 to 16, next, have been announced by Prof. Walter H. Gale, Director of Summer Session.

The conference, in which three MIT departments will be associated, will have the sponsorship of a number of professional societies. Its purpose will be to consider questions which must be answered before the use of prestressed concrete can be extended fully in American construction practice.

Three topics will form the base for discussion during the meeting:

1. Present and possible future applications of prestressed concrete construction.
2. Manufacture and construction, including materials, techniques, and costs.
3. Problems in research and design presented by the use of prestressed concrete.

Emphasis will be on problems of design and construction practice in the United States and the relation of these to practices already adopted in other countries. Following are among the questions to be considered: In what immediate specific applications may prestressed concrete effectively supplement or supplant ordinary reinforced concrete? What will be the most economical mix designs, and what type of prestressing steel is best employed? What construction methods for prestressing are available, and what are the advantages and disadvantages of each? How may the European methods of construction be adapted for use in this country? What are the problems peculiar to the use of prestressed concrete in the United States? What (if any) modifications should be made in European methods of design as adapted for use here? What about a design code for prestressed concrete?

The conference will be under the direction of Prof. Myle J. Holley, Jr., of the MIT department of civil and sanitary engineering, and Prof. Howard Simpson of the department of building engineering and construction.

Brief news of education and research

Seabee school—A Construction Battalion Reserve school, offering 2-week courses to officer and enlisted reservists, has been set up at Great Lakes Naval Training Center, Ill., the Navy has announced. Classes will convene every three weeks under the management control of the Bureau of Naval Personnel. Enlisted men will be trained in the construction specialization ratings of steelworker, construction driver, construction electrician's mate, utilities man, surveyor, builder and construction mechanic. Naval Reserve Civil Engineer Corps officers will be instructed in their administrative, technical and engineering specializations.

Civils well paid—All engineering graduates of the January class at the Illinois Institute of Technology are at work. Average starting salary is $290 a month, but civil engineers are getting most—$306, as compared with electrical $282, chemical $294, mechanical and industrial $286.

Industrial hygiene—The University of Washington has established an industrial hygiene and air pollution service, known as the Environmental Research Laboratory, to serve industries and cities of the state. First client will be Seattle, which has approved a $7,500 appropriation for a study of air pollution. Findings of the study will serve as a basis for a city ordinance to control air contamination. Dr. Leon Sealey is director of the service.

Coating materials—Engineering Research Council, University of Detroit, Mich., is carrying out special experiments to develop coating materials for use in basements to prevent dampness from water leakage. Charles Duncombe, chairman, says some solutions offer promise of good results but more information is required. In sandy sections the problem of damp cellars is more acute. The immediate objective is a complete laboratory facility with standard procedure enabling a thorough test of proposed coating materials. Concrete Products Association of Detroit, Martin Bergen, Inc., and Truscon Laboratories, Inc., are cooperating in this work.

Open house—A decade of advancement in engineering and science was revealed to the public when the Polytechnic Institute of Brooklyn opened its laboratories and shops to visitors recently for the first time in ten years. The public was invited to inspect the

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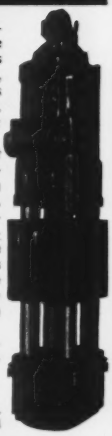

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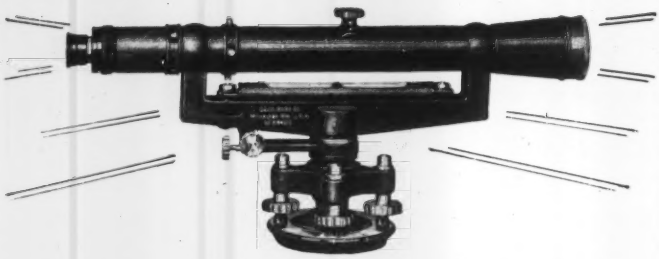

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Features	D. White No. 7080	Instrument A	Instrument B
Magnifying Power of Telescope	35X	30X	27X
Distance away you can read 1/100 ft. graduation	1200 ft.	1050 ft.	900 ft.
Diameter of objective lens	1.81 in.	1.485 in.	1.69 in.
Field of view (In minutes of arc)	64'	52'	60'
Coated optics	YES	YES	YES
Covered Leveling Screws	YES	YES	YES
Can you easily replace worn leveling screws in the field?	YES	NO	YES
Sensitivity of level vial (in seconds of arc per 2mm of graduation)	20"	20"	25"
Price — Complete with carrying case, tripod and accessories — F.O.B. factory	$280.00*	higher	higher

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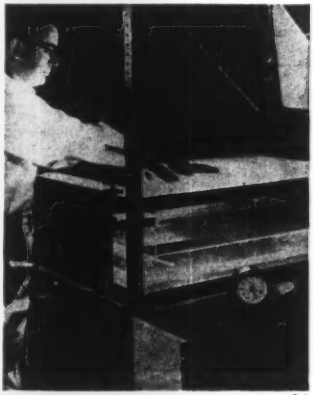
many laboratories, shops and student research projects. The deans and heads of departments were available in their offices to advise students interested in preparing for engineering and scientific careers.

Architectural structures—In amplification of the notice about the American consulting engineer, J. J. Polivka, (ENR March 1, page 52) he is lecturer on architectural structures in the department of art and architecture, Stanford University. He did experimental stress analysis by photoelasticity on Podolsko Bridge, Central Europe. Until 1944 he was research associate in civil engineering, the University of California, Berkeley. He did essential engineering for the war industry, and he has done structural engineering work for postwar projects, such as prestressed concrete structures on the new Pier 57, N. Y. City (for E. H. Praeger); Guggenheim Museum, N. Y.; Johnson's Research Tower, Racine, Wis. (both of the latter for Frank Lloyd Wright). With Wright as architect, he submitted to Dolwig's legislative committee, California, a proposal for a new San Francisco Bay crossing.



WAVE CHARACTERISTICS—On this wave research machine Leon Pocinki of the research division, New York University College of Engineering, prepares to make a photograph of wave patterns set up in a lucite tank filled with water. The research is sponsored by the Beach Erosion Board. A special vibrator mechanism produces ripples in the water and the shadows fall onto a ground glass where a piece of sensitized photographic paper is exposed. The large mirror is for viewing the patterns which are also being studied with regard to light and sound wave analogies. Small models representing sand bars, canyons and underwater formations, are inserted into the tank in order to evaluate the effect of such conditions on shape and intensity of waves.

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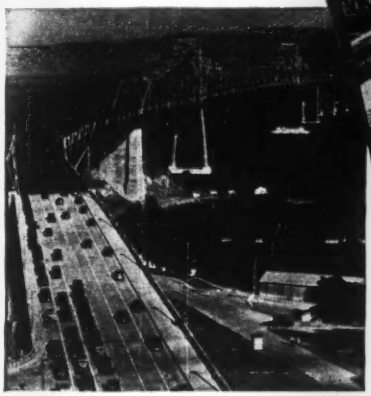
Cleveland Municipal Airport, Cleveland, Ohio. Flexcell Joint Filler helps insure level, lasting concrete runways.

Detroit Express Highway, Detroit, Michigan. Smooth, tight, safe joints assured by Flexcell Joint Filler!



San Francisco-Oakland Bay Bridge, San Francisco, California. Joints are neat and trouble-free, thanks to Flexcell Joint Filler!

Only Flexcell gives all these big advantages

1. **NON-EXTRUDING**—Millions of tiny air cells in Flexcell Joint Filler permit it to absorb compression from adjacent concrete slabs *without extruding*. Its rough-textured surface means a firmer bond with concrete.
2. **KEEPS JOINTS CLOSED**—On release of pressure, Flexcell Joint Filler expands to fill crevices and keep joints tight. Over 70% "recovery" proved in severe laboratory tests!
3. **MOISTURE-RESISTANT**—Flexcell Joint Filler has a base of durable Celotex Cane Fibre Board impregnated with a special asphaltic compound, for lasting protection against moisture.
4. **TOUGH, DURABLE**—The ability of Flexcell Joint Filler to withstand severest service, extremes of heat and cold, has been *proved by years of performance* in hundreds of major installations all over the country!
5. **EASY TO WORK WITH**—Flexcell Joint Filler is light, easy to install. Provides neat, finished joints that require no trimming. Outstanding for work involving special cutting, tapering and fabricating.
6. **ONLY FLEXCELL**, of all expansion joint fillers, is made from long, remarkably strong Louisiana cane fibres—and protected by the exclusive (patented) Ferox* Process against fungus, dry rot and termites.

*FLEXCELL is the Trade Mark identifying Bituminous Fibre Expansion Joint Filler marketed by The Celotex Corporation.

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On streets and highways, bridges, airport runways—*wherever concrete meets concrete*—engineers specify Flexcell* Joint Filler for neat, durable, resilient, expansion joints. They absorb pressure WITHOUT EXTRUDING . . . STAY CLOSED under severest service and climatic conditions!

The superiority and economy of Flexcell as an expansion joint filler have been proved through years of performance on hundreds of projects. Now it is gaining acceptance for many other uses, such as sill sealer, plate sealer on masonry construction, perimeter insulation for concrete slabs, vibration isolation, etc. No wonder it is widely specified and used by contractors, engineers and architects, as well as by the U. S. Army, Navy, Federal and Municipal Agencies.

Flexcell Joint Filler is low in first cost, gives years of savings on maintenance. Discover its many advantages and economies for pavements, sidewalks, curbs, gutters, driveways, concrete floors in industrial plants, and many other building uses. Mail coupon below now for full data!

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Remember, you can't start any building or construction job until the location is properly cleared. And with this new Homelite One Man Chain Saw, you can do your clearing in less time . . . with less labor . . . and at less cost. It's the fastest cutting, easiest handling saw ever developed. And it's a rugged, dependable saw that needs less maintenance, fewer repairs, than any other saw.

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MEETINGS

New officers of the Associated General Contractors of Idaho are: C. B. Lauch, president; Wallace B. Curtis, vice-president, J. T. R. McCorkle, manager, and L. D. Robbins, secretary-treasurer; and William Gramkow, Jr. director.

Walter S. Johnson, Niagara Falls, has been elected president of the New York State Association of Home Builders.

A. D. Wylie, Hamilton, Ont., has been elected president of the National Concrete Products Association of Canada. The organization reported 40 new members in the year, and rapid expansion of the use of concrete products and machinery. W. C. Coupland, Toronto, was elected first vice-president; G. Fraser, Windsor, second vice-president, and R. Cooper, Toronto, secretary-treasurer.

The Association of Professional Engineers of New Brunswick has voted to support all efforts of the dominion council to create standard and uniform qualifications for professional registration of engineers in all provinces. President of the association is J. H. Moore, vice-president, R. M. Richardson.

Virgil E. Gundlock, commissioner of subways and superhighways for Chicago has been elected president of the Illinois State Society of Professional Engineers and A. D. Spicer, vice-president. Prof. Harold E. Babbitt, division of sanitary engineering, civil engineering department, University of Illinois was re-elected secretary and was presented with the Illinois award for his 26 years of service in this capacity.

The Ohio River Valley Water Sanitation Commission at a meeting with industrial management representatives elected Clarence W. Klassen, chief sanitary engineer of Illinois, chairman, and E. Blackburn Moore of Virginia vice-chairman. It also adopted bacterial-quality objectives for the Ohio River on water supply and recreational uses, and authorized study of treatment needs.

George D. Auchter is the president of the Jacksonville, Fla., Construction Employers Association for 1951. Other officers are T. E. Satchwell, Jr., vice-president; George A. Babcock, secretary, and James S. Graham, treasurer. The council was organized last fall to bring general and sub-contractors together for the purpose of stabilizing labor conditions. The council succeeded in setting up a cost-of-living wage scale with adjustments each six months if there should be a 5% change in the cost of living index.

Joe E. Borg has been elected president of the Engineers Club of Des Moines, Iowa. Elected vice-presidents were: Carroll L. Johnson, Homer T. Boone and Frank E. Baird. Marshall H. Paige was named secretary-treasurer.

New president of the Tacoma Engineers at Tacoma, Wash., is Clyde E. Murray. Walter S. Gordon is first and Col. E. P. Antonovich second vice-president, with Harold Hagestad as secretary treasurer, and Lewis E. Jeklin executive member.

A. L. R. Sanders, chief engineer for Hazelet and Erdal, Chicago consulting bridge engineers, has been elected president of the Illinois section, American Society of Civil Engineers. Other officers are: H. F. Peckworth, Batavia, director of the American Concrete Pipe Association, first vice-president; F. W. Edwards, head of the civil engineering department at the Illinois Institute of Technology, second vice-president.

W. H. Laughlin, Toronto consulting engineer, has been elected president of the Ontario Association of Professional Engineers, representing 12,000 Ontario engineers. He is a member of the firm of Proctor, Redfern and Laughlin, Toronto. O. D. Johnston, Toronto, was elected first vice-president; J. H. Smith, Toronto, second vice-president. Col. T. D. Medland continues as executive director, and Col. J. M. Muir as secretary and registrar, with offices at Toronto.

The Wisconsin Society of Professional Engineers elected Frederick T. Agthe, Allis-Chalmers Mfg. Co., president; Richard C. Clark, La Crosse, first vice-president; W. G. Younquist, Madison, secretary, and Lloyd M. Schendler, Appleton.

Charles H. Bechert is chairman of the Indiana section of the AWWA; O. A. Newquist, vice-chairman; G. F. Fassnocht, secretary-treasurer; E. F. Kinney, director.

Ray Gart is president of the A.G.C. of Missouri; Frank E. Rolfe, vice-president; J. M. Joyce, treasurer; and E. C. L. Wagner, secretary-manager.

J. Chandler Eakes of Sanford is president of the North Carolina Society of Surveyors succeeding A. B. Hafer.

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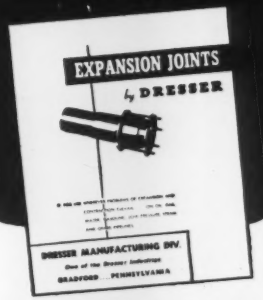

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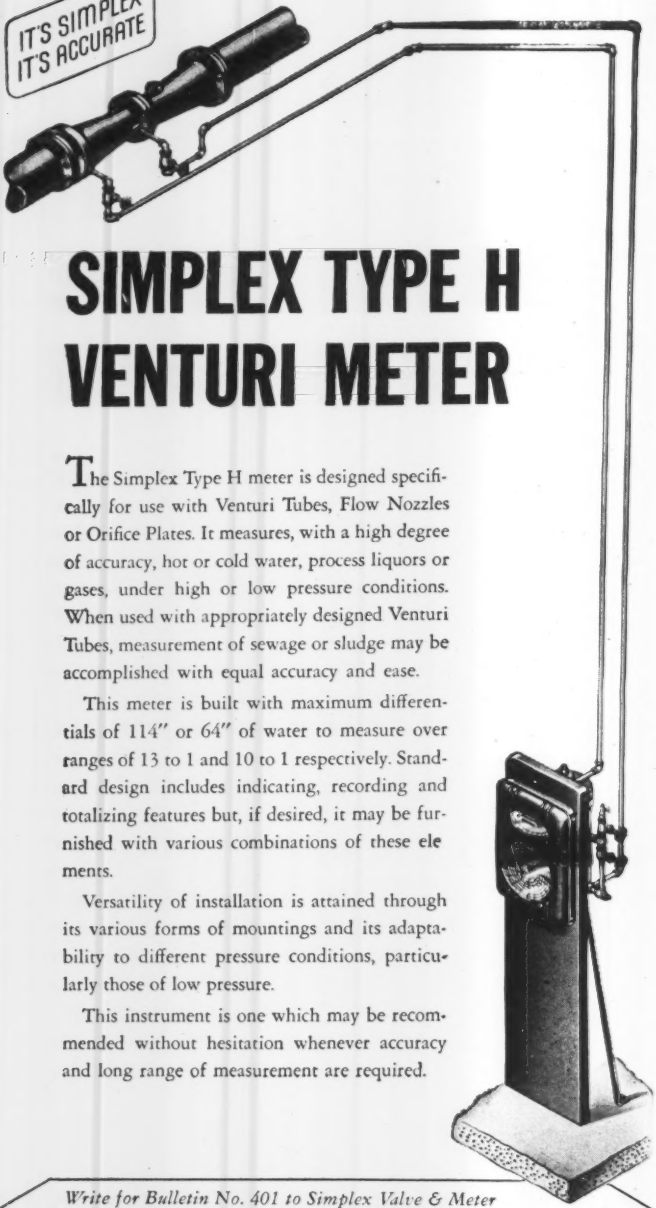

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This meter is built with maximum differentials of 114" or 64" of water to measure over ranges of 13 to 1 and 10 to 1 respectively. Standard design includes indicating, recording and totalizing features but, if desired, it may be furnished with various combinations of these ele ments.

Versatility of installation is attained through its various forms of mountings and its adaptability to different pressure conditions, particularly those of low pressure.

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Other officers: J. C. Currin of Oxford, vice-president, and Edward W. Ruggles of Raleigh, re-elected secretary.

Robert B. Rice of Raleigh is president of the North Carolina Chapter of the National Society of Professional Engineers succeeding M. Frank Wooten, Jr. Other officers: Carl W. Mengel vice-president of the Eastern District; W. F. Freeman vice-president of the Western District; John R. Gowe, re-elected secretary; and T. C. Browne, re-elected treasurer. Carl F. Olson and James A. Loughlin were elected governors for the Eastern District; T. C. Heywood and M. Frank Wooten, Jr., governors for the Western District; J. M. Field national delegate; and M. E. Beatty state delegate from the South Piedmont Chapter, and also a member of the board of directors.

The Constructors Association of Western Pennsylvania has elected John E. O'Leary, president, Frank O. Patterson vice-president of the highway division, Howard H. Sturdy vice-president of the Heavy Division, Dan Dinardo reelected treasurer, William R. McQuade secretary and James A. Nardulli assistant secretary.

CALENDAR

American Water Works Associations, annual conference, Miami, Fla., April 29-May 4.

Materials Handling Exposition and Conference, International Amphitheater, Chicago, Ill., April 30-May 4.

California Sections American Society of Civil Engineers, The Ahwahnee, Yosemite National Park, Calif., May 3-5.

N. Y. State Society of Professional Engineers, Silver Anniversary, Hotel Statler, N. Y. City, May 10-12.

Building Officials Conference of America, King Edward Hotel, Toronto, Ont., May 14-17.

Society for Experimental Stress Analysis, spring meeting, Wardman Park Hotel, Washington, D. C., May 16-18.

Pacific Northwest Sewage Works Assn., Hotel Vancouver, Vancouver, B. C., May 17-19.

Pacific Northwest Section, AWWA, Hotel Vancouver, Vancouver, B. C., May 17-19.

Pennsylvania Society of Professional Engineers, Americus Hotel, Allentown, Pa., May 18-19.

Canadian Section, AWWA, Royal Alexandria Hotel, Winnipeg, Man., May 21-23.

New England and New York Sewage Works Associations, spring meeting, Hotel Kimball, Springfield, Mass., June 7-8.

President's Highway Safety Conference, Washington, D. C., week of June 10.

National Society of Professional Engineers, annual meeting, Nicolet Hotel, Minneapolis, Minn., June 13-16.

American Congress on Surveying and Mapping, annual meeting, Hotel Shoreham, Washington, D. C., June 18-20.

OBITUARY

Charles Waldmann, 55, director of development, Chicago Housing Authority, died April 3. He helped choose sites for 12 proposed public housing projects. He was graduated from the Royal University, Budapest in civil engineering. He had served as chief engineer and technical director of American Community Builders, Inc., on the new suburban town of Park Forest, near Chicago.

Elmer L. Ferguson, 63, Ft. Worth, Tex., died March 28. He was past president of the Ft. Worth Branch of the American Society of Civil Engineers. He was formerly chief of the engineering section of the Federal Works Agency at Ft. Worth, and latterly was an engineer in the Community Facilities Service.

William Henry Code, 85, chief irrigation engineer for the Indian Bureau of the U. S. Department of the Interior (1902-1911) and who did work on canal and irrigation projects for both the federal government and for the Los Angeles Department of Water and Power, died in Los Angeles recently. At one time he served on the advisory board of engineers for Los Angeles in the matter of disposition of surplus waters from the Owens River Aqueduct.

Hiram T. Horton, 63, of Valparaiso, Ind., died April 3. He had been director of the Chicago Bridge and Iron Co. and had charge of its erection activities from 1912 to 1929, except for a period as an Army pilot during World War I. He served as a transport commander in World War II.

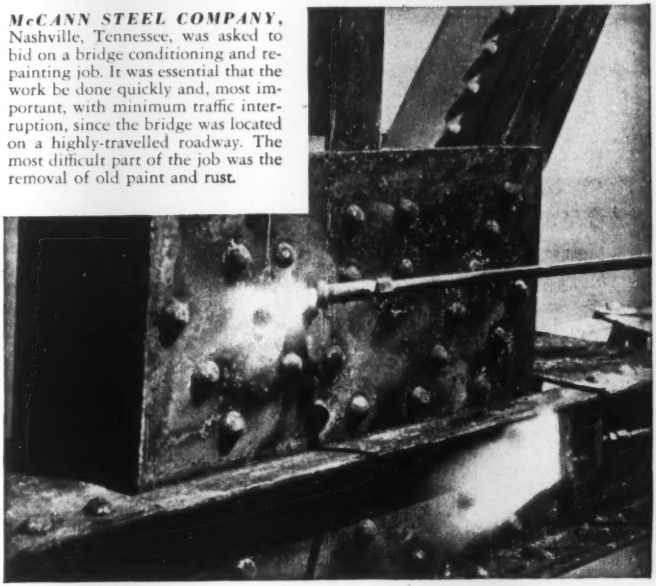
Luis G. G. Williams, 73, Mexican civil engineer, oldest builder of lighthouses for the Marine Ministry, and dean of the Mexican Contractors Association, died in Mexico City recently. He had served the ministry for 50 years.

Carlos C. Ordozkoiti, 72, Mexican civil engineer who specialized in irrigation and was formerly chief of the Ministry of Agriculture's irrigation department, died in Mexico City recently.

John S. Dean, 69, who retired in 1949 as engineer of water works construction, died April 6 in Chicago. He worked 44 years for the city water department, starting two years after his graduation from the University of Wisconsin.

Oxyacetylene Flame Cleaning speeds bridge repainting —without traffic interruption

McCANN STEEL COMPANY, Nashville, Tennessee, was asked to bid on a bridge conditioning and repainting job. It was essential that the work be done quickly and, most important, with minimum traffic interruption, since the bridge was located on a highly-travelled roadway. The most difficult part of the job was the removal of old paint and rust.



F. T. Wilson, Airco technical sales service representative, recommended oxyacetylene flame cleaning to remove scale and old paint prior to repainting. This process, requiring minimum equipment, leaves a warm, clean surface, which is conducive to a long-lasting paint job. Notice in the photograph how the rivet heads are being cleaned with a round tip and the flat surface is being conditioned with a wide flat tip.

The entire bridge was cleaned most satisfactorily, without disrupting traffic too greatly. City officials were very pleased. Bids for reconditioning a second bridge across the Cumberland River will specify the use of flame cleaning.

If you have steel structures exposed to the elements, requiring long-time paint protection, investigate the advantages of Airco oxyacetylene flame cleaning. For technical service or copies of bulletins ADG-1066A, ADG-1067 and ADR-57, describing this process, please write your nearest Airco Office.

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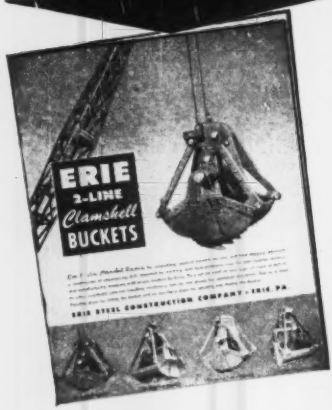
PAYLOADS



This new Erie Catalog makes it possible to quickly choose, from the 4 classes of Erie 2-Line Buckets, the right bucket for *your* crane and material. Perhaps your crane can operate a larger bucket, for Erie alloy welded steel buckets result in greater payloads through scientific bucket weight reduction. Remember, that on bucket work, the cost of the crane and the operator all ride on the bucket. Send for this helpful catalog or outline your conditions and our engineers will make recommendations.

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ERIE
STEEL CONSTRUCTION COMPANY
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UNIT PRICES BID BY CONTRACTORS

Housing, streets for government camp, Alaska

The contract for the construction of 12 residences, 2 garages, streets and utilities at Eklutna Government Camp, Eklutna Project, Alaska, was awarded to the low bid of $482,377 by the Bureau of Reclamation on March 1, 1951. The low bid was 1% below the only other bid presented and 29% above the engineer's estimate.

Eklutna Camp is located approximately 33 miles northeast of Anchorage and 14½ miles south of Palmer, Alaska. Housing to be built consists of six 3-bedroom and six 2-bedroom residences of wood frame construction with basement and attached 1-car garage. Each home will be equipped with plumbing, heating, electrical installations and insulated walls.

Two 10-car garages, water distribution and sewerage systems, streets, sidewalks, gutters and driveways will also be constructed. All materials except the water supply pump and suction pipe must be furnished by the contractor.

The work must be completed within 260 calendar days. A penalty of $50 per day will be imposed upon the contractor for each day's delay. Minimum wage rates are: building laborers, $2.435; carpenters, $2.84; cement finishers, $2.85; electricians, $3.10; painters, $2.85-$3.35; plasterers, $3.07; and power operators, $2.67-$3.27.

Bidders included:

1 Morrison-Knudson Co., Inc. & Peter Kiewit Sons' Co., Anchorage, Alaska (Contract)	$482,377
2 Denali Const. Co., Inc., Anchorage	487,371
Engineer's estimate	374,298

Items	Quantity	Unit prices 1	Unit prices 2
Excavation, general....cy	23,500	$1.05	$1.42
For structures....cy	5,800	1.05	1.23
Rolling embankmt....hrs	170	12.10	22.00
Compact backfill....cy	470	3.80	4.70
Excav & backfill:			
Water pipe trnch....lf	3,900	1.85	1.67
Sewer p trench 5-8' deep....lf	1,360	1.40	1.70
4-8', less 10'....lf	980	2.40	1.80
10-14'....lf	190	3.80	2.00
Place gravel....cy	90	6.20	8.00
Laying corrugated metal pipe, 18"....lf	34	6.50	8.50
24"....lf	64	9.75	12.00
Construct guardrail....lf	170	3.40	4.40
Conc in sidewk, gutter, walks, floor slabs in residence....cy	275	60.00	70.00
In structures....cy	480	150.00	102.00
Handling cement....bbl	1,080	10.60	11.40
Reinf bars, fabric, place..lb	30,000	0.20	0.29
Construct:			
6–2 bedrm residen....ls	.....	97,500	115,818
6–3 bedrm residen....ls	.....	108,460	126,231
2–10 car garages....ls	.....	14,300	17,548
Pump & chlorination house....ls	.....	1,955	1,584
Lay:			
Fittings for watermains & 6" cast-iron water pipe....lf	3,000	15.30	8.50
Galvaniz-steel service p, ¾"....lf	540	2.85	0.65
1"....lf	250	3.50	0.74
Install:			
Lead gooseneck & ¾" service connection....ea	12	25.00	23.00
1"....ea	10	27.90	28.00
Serv-box assembly & ¾" surb stop....ea	12	21.00	24.00
1"....ea	10	27.80	28.00
Fire hydr assembl....ea	4	627.00	600.00
6" gate valve & vlv box assembly....ea	7	314.00	128.00
Water pump, suction pipe, controls....lb	1,300	3.50	0.60
Chlorination equip....ls	.....	1,950	2,200
Lay fitting for sewer line & 4" vit claypipe..lf	1,100	3.35	3.00
8"....lf	1,450	6.40	6.00
Cast-iron manhl frame & cover, misc metalwk, instal....lb	3,600	0.70	0.35
Misc metal p, valve, fittings, i....lb	4,000	1.50	0.45
Lay 6" vit clay pipe & Fittings with oem joints for drain line....lf	340	4.85	5.25
Fittings with open joints....lf	80	3.85	5.00
Sewer manhl, constr....ls	.....	4,930	5,100
Place gravel or crush rock for base course & shoulder....cy	655	5.20	5.60
For surface crse....cy	320	6.85	5.00
Watering base crs....gal	90,000	12.50	7.70
Apply asph matl for prime coat....gal	1,700	0.70	1.00
For surface crs....gal	6,600	0.70	1.00
For seal coat....gal	1,070	0.70	1.10
Rolling surface crse, mix & finish....sy	5,800	0.20	0.50
Apply coarse sand for seal coat....cy	155	8.60	15.60
Stock-piling:			
Gravel or crushed rock for surf crs....cy	80	5.70	3.30
Coarse sand for seal coat....cy	40	5.00	5.50

Concrete piles, footings, South Carolina hospital

Five bids, 130% apart, were received by the Board of Trustees of the Medical College of the State of South Carolina at Charleston, S. C., March 2, 1951 for the construction of cast in place concrete piles and reinforced concrete foundations for the new twelve story teaching hospital in Charleston. The low bid of $543,543 was 7.7% below the second low bid. Dotterer Engineering Co. of Charleston is the engineer.

Materials to be used on the job include: 2,006 80 ft cast in place piles, 160,480 lin ft; 167,500 lbs of reinforced steel; and 2,080 cu yds of concrete footing. The work must be completed within 120 calendar days. Minimum wage rates are: common labor, $0.90; carpenters, reinforcing iron workers and pile driving workers, $1.75; power operators, $2.25.

The bids on this project were presented in lump sum. The following unit price schedule is for unknown quantities which may have to be added or deducted from the work.

Bidders included:

1 Charleston Constructors, Inc., Charleston (Contract)	$543,543
2 C. Y. Thomason & Co., Charleston	585,844
5 I. B. Miller Contracting Corp., Astoria, N. Y.	1,249,650

Items	Unit prices 1	Unit prices 2
Add 80' pile....ea	$214.50	$225.00
Omit 80' pile....ea	156.00	155.00
Add per lin ft extra....lf	5.06	3.90
Deduct per lin ft omitted....lf	1.75	1.00
Add for extra concrete....cy	33.00	45.00
Deduct for omitted conc....cy	16.70	35.10
Add for extra reinf steel in place..lb	0.14	0.05
Deduct for reinf steel omitted..lb	0.08	0.11

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You Save Time by bringing complete power lubrication to equipment right on the job! Air operated pumps deliver grease or gear oil direct from "barrel-to-bearing." Free from dirt! Free from dust!

You Save Money by cutting the costly equipment "downtime" required for lubrication, thereby increasing the output of both your men and machines.

You Save Equipment by keeping your earthmoving rigs running smoother, longer – no matter how far afield they may be! And, you reduce greatly the possibility of bearing failures.

Now S-E-C-T-I-O-N-A-L-I-Z-E-D to make up any portable greasing rig you want!

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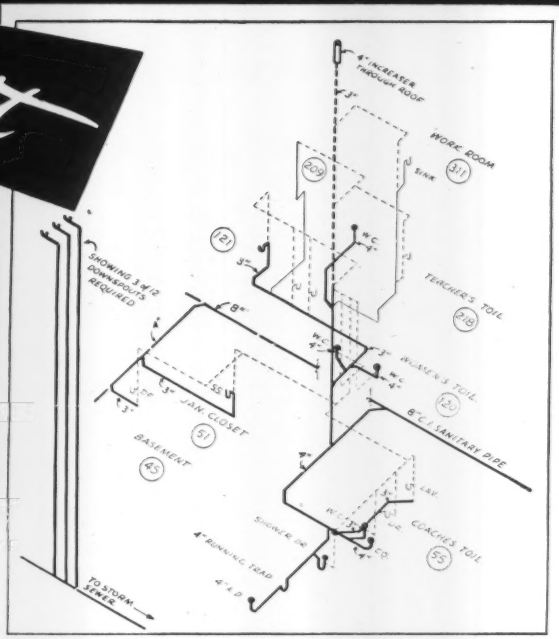

- ARCHITECTS: Jos. C. Llewellyn Co.
- ENGINEERS: Samuel R. Lewis & Associates
- PLUMBING CONTRACTOR: Robert E. Murphy

Approximately 1500 feet of Clow "IPS"* (threaded) Cast Iron Pipe is now being installed in the new Physical Education and Music Building of the Lyons Township High School, La Grange, Illinois. This corrosion-proof pipe was chosen for long-range economy, as it lasts for a century or more. A section of the original riser blueprint is depicted above, with heavy lines indicating where Clow "IPS"* (threaded) Cast Iron Pipe will serve as vent stacks, waste lines, soil pipe, and downspouts. Also shown is a view of the building under construction, and a view showing how it will appear when completed.

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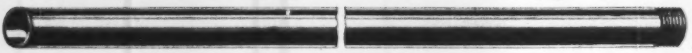


and their National Cast Iron Pipe Division, Birmingham, Alabama; subsidiaries Eddy Valve Co., Waterford, New York; Iowa Valve Co., Oskaloosa, Iowa.

CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager *J. A. MAHONEY, Reports* *M. R. ROESSLER, Statistics*

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION

† **Maine**—B.A. 5/1—U. S. Eng., P. O. Box 2316, Boston, Zone 7, maintenance dredging in Weymouth Fore River, CIVENG 19-016-51-39.

BIDS ASKED—BUILDINGS

Conn., Wallingford—GENERATOR, etc.—B.A. About 5/1—Town, Bd. Selectmen, generator bldg. and power plant $50,000. CD 4/5/49.

Mass., Stoneham—HOSPITAL—B.A. 5/3—New England Sanatarium & Hospital, 5 Woodland Rd., hospital addn., Woodland Rd. $800,000. Plans deposit $50. CD 9/19.

SOON LETS CONTRACT—BUILDINGS

Mass., Worcester—SERVICE—Cambridge Gas Light Co., 719 Mass. Ave., Cambridge, soon lets contract, 2 story, 80x100 ft., brick, cinder block, rein.-con. service bldg., Quinsigamond Ave. $82,000. John R. Abbot, 1278 Mass. Ave., Cambridge, archt.

R. I., Westerly—CHURCH—Central Baptist Church, 14 Elm St., soon lets contract church. $300,000. CD 3/27.

LOW BIDDERS—HEAVY CONSTRUCTION

Wes-Julian Constr. Corp., 850 Boston Providence Hy., Dedham, Mass. Low Bidder. $141,561. sewer, AUGUSTA, ME. City, Pub. Wks. Dpt., City Hall, Augusta, Me. Metcalf & Eddy, 1300 Statler Bldg., Boston, Mass., engrs.

▲ **Merritt-Chapman & Scott Corp.**, 17 Battery Pl., New York, N. Y., Low Bidder, $1,499,017, bridge substructure over Merrimac River at Newburyport and Amesbury; **Harris Structural Steel Co.**, 419 4 Ave., New York, N. Y., $2,795,639, bridge superstructure over Merrimac River at Newburyport and Amesbury, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Apr. 10. CD 3/14.

C. L. Guild Constr. Co., 94 Water St., East Providence, R. I. Low Bidder, $144,880, pumping station near Watchemoket Cove, EAST PROVIDENCE, R. I. Town, East Providence Sewer Comn., Town Hall, East Providence, R. I. Bids April 2. CD 3/20.

LOW BIDDERS—BUILDINGS

▲ **Volpe Constr. Co.**, 54 Eastern Ave., Boston, Mass. and **Farina Bros., Inc.**, 61 Bridge St., Boston, Mass. Low Bidder. $8,000,000. BARRACKS SCHOOL and DORMITORIES, at Limestone Air Base, LIMESTONE, ME. U. S. Eng., P. O. Box 2316, Boston, 7, Mass. CD 11/17.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

New Jersey—HIGHWAY LIGHTING, etc.—B. A. 5/2—R. J. Abbott, comr., State Hy. Dpt., State Hy. Office Bldg., Trenton, installing highway lighting and sign sys. on Route 4 Parkway, Sects. 1 and 2, from Route 25 in New Brunswick Ave., Woodbridge Twp., Middlesex Co. Plans deposit $10.

LOW BIDDERS—HEAVY CONSTRUCTION

Gus Weinberger, 231 Oak St., Old Forge, Pa. Low Bidder. $115,300. water supply sys. imprvs. at Clarks Summit State Hospital, CLARKS SUMMIT, PA. Dpt. Property & Supplies, 1400 N. 9 St., Harrisburg, Pa. Bids April 11. CD 3/28.

Brotherton Constr. Co., 1025 S. 21 St., Harrisburg, Pa. Low Bidder. $184,020, est. $250,000. indoor swimming pool at Pennsylvania Soldiers' Orphan School, SCOTLAND, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids April 11. CD 3/23.

LOW BIDDERS—BUILDINGS

Baton Constr. Corp., 1717 Sansom St., Phila., Pa. Low Bidder, $744,000, est. $700,000. addnl. sect. PHYSICAL EDUCATION bldg. at Pennsylvania State College, STATE COLLEGE, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids April 11. CD 3/23.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION

† **S. C. Charleston**—B.A. 5/1—Pub. Wks. Office, Sixth Naval Dist., Naval Base, repairs to water distr. sys., NAD, No. 28781.

La., Covington—B.A. 5/3—City, 15,000 lin. ft. sewer, mains, laterals and pumping stations, J. M. Fourmy, Hammond, engr.

† **Florida**—B.A. 5/8—U. S. Eng., P. O. Box 497, Jacksonville, Structure S-39 in Hillsboro Canal, Deerfield Beach, CIVENG 08-123-51-58. Extended date.

† **Mississippi**—B.A. 5/8—U. S. Eng., P. O. Box 60, Vicksburg, Steele Bayou channel imprv. Item St. 41, Mile 40.50 to Mile 42.30, Issaquena Co., CIVENG 22-052-51-161.

† **Tennessee**—B.A. 5/8—U. S. Eng., P. O. Box 97, Memphis, Zone 1, construct Sect 1-D, Memphis, Wolf River and Nonconnah Creek, Tennessee Proj. incl. levees, reservoir construction and appurtenant structures, along left bank of Wolf River in northwest part of city of Memphis, Shelby Co., Inv. No. Serial No. CIVENG 40-041-51-121. Plans deposit $15.

Fla., Miami—B.A. 5/16—City c/o Div. Engineering Dinner Key, Miami, Fla., paving imprvs. in Dist. H-485, H-484, and H-486. Extended date. CD 3/11.

BIDS ASKED—BUILDINGS

Ga., Douglas—HOSPITAL—B.A. 5/10—Coffee Co. hospital, $600,000. Wm. J. J. Chase & Assocs. 140 Peachtree St., Atlanta, archts. CD 10/6/49.

† **N. C., Camp Lejeune**—BUILDINGS—B.A. 5/14—Pub. Wks. Office, Bldg. No. 1005, Marine Barracks, erection, alteration one 40x100 ft. and one 20x48 ft., one 40x60 ft. and one 40x40 ft. Government furnished prefabricated steel bldgs., construct floors, aprons and fdns. for same, 10x20 ft. brick masonry bldg. with concrete floor and roof, construct 2 grease racks install all services, utilities necessary at Marine Barracks, Spec. No. 26930. Plans deposit $20.

Tenn., Paris—HOSPITAL—B.A. About 5/15—Henry Co., Paris, hospital. Approx. $300,000. J. Frazier Smith, Goodwyn Institute Bldg., Memphis, archt. CD 3/22.

Tenn., Sewanee—DORMITORY - DINING HALL—B.A. 5/17—University of the South, Sewanee, dormitory and dining hall. Approx. $300,000. Warren, Knight & Davis, Protective Life Bldg., Birmingham, Ala. archts. CD 3/23, under LB.

LOW BIDDERS—HEAVY CONSTRUCTION

F. D. Cline Construction Co., Inc., 6 E. Davie St., Raleigh, N. C. Low Bidder, $118,953, 75 mi. rural distr. lines, Hertford, Bertie and Northampton Counties, NORTH CAROLINA. Roanoke Electric Membership Corp., Rich Square, N. C. Bids April 5. CD 3/28.

† **Hugh McMath Constr. Co.**, Brennan Rd., Columbus Rd., Ga., Low Bidder, $909,645, concrete aprons at Warner Robins Air Force Base, MACON, GA. U. S. Eng., P. O. Box 889, Savannah, Ga. Bids Apr. 6.

▲ **J. E. Milam**, 8940 1 Ave. S., Birmingham, Ala., Low Bidders, Bessemer Outfall Sewer and Sec. A-3, Village Creek Collecting Sewerage Sys.***C. E. Adams, 3700 10 Ave. N., Birmingham, Ala., $157,535, installing Homewood-Griffin Creek Sewer; **Michigan Sewer Constr. Co.**, 21720 W. 8 Mile Rd., Southfield, Detroit, Mich., $1,240,933 diversion tunnel***L. W. Wells Constr. Co., 1420 Miller St. Saginaw, Mich., $592,562, installing Sect. A-1, $909,439 Sect. A2 ***American Vitr. Products Co., National City Bank Bldg., Cleveland, O., $831,371 pipe & liner plate, Sect. A-1, $498,117 Sect. A-2 Village Creek Collecting Sewerage System, BIRMINGHAM, ALA. Jefferson Co., Court House, Birmingham, Ala. Bids April 3. CD 2/27.

LOW BIDDERS—BUILDINGS

▲† **Worth D. Kenyon Constr. Co., Inc.**, Capital Club Bldg., Raleigh, N. C. Low Bidder,, $1,212,625, temporary emergency BARRACKS, CAMP LEJEUNE, N. C. Pub. Wks. Office, Bldg. No. 1005, Marine Barracks, Camp Lejeune, N. C. Bids April 9. CD 3/13.

State Bldg. Comn., Jackson, Miss. rejected bids Apr. 4. stadium-dormitory at Mississippi Southern College, HATTIESBURG, MISS. L.B. $347,000. CD 4/12, under L.B.

Pittman Contg. Co., 2925 Franklin Ave., New Orleans, La. Low Bidder. Est. $200,000, compounding PLANT near Southport, NEW ORLEANS, LA. International Lubricant Corp., Southport, La. Bids Mar. 26 CD 3/28.

Polston & Robinson, Lafayette, Tenn. Low Bidder, $379,651, HOSPITAL addn., MURFREESBORO, TENN. Rutherford Co., Murfreesboro, Tenn. Bids March 27.

CONTRACTS—HEAVY CONSTRUCTION

† **Kelley Constr. Co.**, Clarksburg, W. Va., Contract Awarded $350,000. Phase 2 airport development, incl. exten. 1,200 ft. runway to 5,000 ft., HUNTINGTON, W. VA. Tri-State Airport Auth., c/o contractor, CD 1/14/47.

Comrs. Pub. Wks., 14 George St., Charleston. Own Forces. $175,000. WW extens., incl. booster pump, storage tank and 8 in. mains, CHARLESTON, S. C. Francis B. McDowell, Jr., 14 George St., Charleston, S. C., engr.

† **Hayes Heating & Plumbing Co.**, Macon, Ga. Contract Awarded, $111,646, Inv. 52, replacing sections steam distr. sys., MACON, GA. Purchasing & Contg. Office Warner Robins Air Force Base, Macon, Ga.

Red River Constr. Co., 2212 Hollywood Ave., Shreveport, La. Contract Awarded. $529,384. sewer and WW imprvs., BOSSIER CITY, LA. City, Bossier City, La. CD 4/9, under L.B.

CONTRACTS—BUILDINGS

▲ **Gill Constr. Co.**, Fort Lauderdale, Fla. Owner Builds. $2,000,000. 300 HOMES in Northwood Section, FORT LAUDERDALE, FLA.

Dye & Mullings, Inc., P. O. Box 485, Columbia, Miss. Contract Awarded. $889,689. LABORATORY SCHOOL—College of Education Bldg. at Louisiana State University, BATON ROUGE, LA. Louisiana State University, Baton Rouge, La. CD 4/11, under LB.

Don V. Smith, Vinton, La. Contract Awarded. $82,000. rice storage PLANT, VINTON, LA. Vinton Co-operative Drying Co., Vinton, La.

Mason Co., Inc., c/o Faires & Sanfrod, archts., Falls Bldg., Memphis, Tenn. Owner Builds. Approx. $350,000. 56 HOMES in C. M. Kee subdivision, MEMPHIS, TENN.

Southern Housing Co. c/o Faires & Sanford, archts. Falls Bldg., Memphis, Tenn. Owner builds. 76 HOMES on Kansas Park sub-division MEMPHIS, TENN.

Tennessee Development Co., 240½ 4th Ave. N. Nashville, Tenn. Owner builds. $400,000. 100 RESIDENCES, Nolansville Rd., NASHVILLE, TENN.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION

† **Iowa**—B. A. 5/9—Soil Conservation Service, 434 N. Plankington Ave., Milwaukee, Wis., flood control works Habinck Minor-Watershed, Parts NE and AB in Little Sioux Basin, near Mapleton, Monoma Co.

BIDS ASKED—BUILDINGS

Mich., Ionia—HOSPITAL—B. A. 5/2—State, A. N. Langius, dir. State Bldg. Dpt., Larsing, 2 story, rein.-con. men's tubercular and geriatric unit bldg., Ionia State Hosital. $700,000. H. E. Beyster Corp., Industrial Trust Bldg., Detroit, Zone 2, archts. CD 4/5.

Ind., Gary—SCHOOL—B. A. 5/22—School, City of Gary, 524 Garfield St., school, Jackson and 27 Sts., $450,000. Perkins & Wills, 309 Jackson St., Chicago, 6, Ill., archts. Beine, Hall & Curran, 607 Broadway, Gary, assoc. archts. CD 2/16.

LOW BIDDERS—HEAVY CONSTRUCTION

Keeley Bros. Contg. Co., 4211 State St., East St. Louis, Ill. Low Bidder, $102,155, c. conc. paving 17 St.; **H. H. Hall Constr. Co.**, 211 S. 15 St., East St. Louis, Ill., $109,337, c. conc. paving 36 St., EAST ST. LOUIS, ILL. City, Alvin G. Fields, street comr., City Hall, East St. Louis, Ill. Bids Mar. 29.

▲ **Streu Constr. Co.**, Two Rivers, Wis., Low Bidder, $425,709, Contr. 1, c. conc. 8.406 mi. The Pittsville-Wisconsin Rapids Rd., S.T. Hys. 13 and 73, Proj. F 04-4(6), Wood Co., $599,305, Contrs. 1 and 3, c. conc. 13.606 mi. The Platteville-Lancaster Rd., S.T. Hys. 81 and 35 and U.D. Hy. 61, Proj.

PROJECTS COVERED

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000.

Classes of Construction

(Name in order of Listing)

Water Supply	Latin America
Sewers, Waste Disposal	Public Buildings
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

Stages Reported

PROPOSED WORK: Including appointment of engineers or architects.

BIDS ASKED (new announcements only). For full calendar, see also preceding issues of ENR.

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

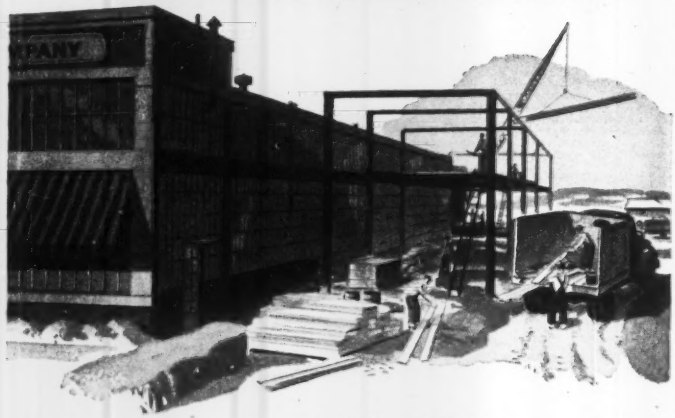
CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
B.A.	Bids Asked
ENR	Engineering News-Record
CD	Engineering News-Record Construction Daily

Planning TO EXPAND PRODUCTION?



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Also Manufacturers of Surface Industrial Furnaces, Kathabar Humidity Control

S. 010(4) and T. 0801(3), Grant Co.***Lee H. Parker, Appleton, Wis., $238,346, Contr. 1, c. conc. 1.388 mi. The West Wisconsin Ave. (City of Appleton) and U.S.H. 41-Appleton (West Wisconsin Ave. Extn) Road, U.S. Hy. 10 and S.T. Hy. 96, Projs. U 4003 (2) and T 019-4 (2), Outagamie Co.*** Murphy Constr. Co., Black Creek, Wis., $434,262. Contr. 2, b. conc. 18.191 mi. The Black Creek-North County Line and South County Line-Bonduel Road, S.T. Hys. 47 and 55, Projs. F 09-1 (12) and F 091 (19), Outgamie Co.***Mathy & Thornton Constr. Co., La Crosse, Wis., $328,541, Conts. 1, 3 and 1, b. conc. 14.173 mi. The River Falls-Hudson and Hudson-Hammond Rds., S.T. Hy. 35 and U.S. Hy. 12, Proj. F 028 (2) (20) T 96-4(11) and T06-4(14), St. Croix Co., WISCONSIN, State Hy. Comn., Madison, Wis. Bids Apr. 10. CD 3/21.

T. J. Vitcenda, Watertown, Wis. Low Bidder, $62,451, Contr. 1, Sellick Bridge and Approaches, The Rockville-Plattteville Road, C. T. HY "B" Proj. S 020 (3), Grant Co., WISCONSIN State Hy. Dpt., Madison Wis. Bids Apr. 10. CD 3/21.

CONTRACTS—HEAVY CONSTRUCTION

L. & L. Service Co., 960 E. Center St., Milwaukee 12, Wis. Contract Awarded. **$72,478**, sewers in W. State St., MILWAUKEE, WIS. City, Milwaukee, Wis. Bids Apr. 5, awarded Apr. 9.

Badger Constr. Co., 229 E. Wisconsin Ave., Milwaukee 2, Wis. Contract Awarded. **$113,906**, paving W. Wisconsin Ave.; **John C. Bluhm & Son**, 6361 N. Lake Dr., Milwaukee 11, Wis., **$77,300**, paving W. Douglas Rd., MILWAUKEE, WIS. City, Milwaukee, Wis. Bids Apr. 6, awarded Apr. 9.

CONTRACTS—BUILDINGS

Leo Reuth & Sons, Inc., 1050 Cherry St., Hammond, Ind. Contract Awarded. **$450,000**, 3 story, bsmt. Morton High SCHOOL, 7040 Marshall Ave., HAMMOND, IND. School City of Hammond, 5935 Hohman Ave., Hammond, Ind. Awarded Apr. 4. CD 4/4 under LB.

Tonyan Constr. Co., 100 Borden St., McHenry, Ill. Contract Awarded. **$653,000**, Township HIGH SCHOOL, ANTIOCH, ILL. School Dist. 117, Antioch, Ill. Bids Mar. 9. CD 3/27, under LB.

▲ **Coath & Goss**, 5103 W. Lake St., Chicago, 44, Ill. Contract Awarded. **$1,226,580**. GRADE SCHOOL, Lamon Ave., 46 and 47 Sts., CHICAGO, ILL. Bd. Educ., 228 N. La Salle St., Chicago, 1, Ill. CD 3/26, under LB.

Louis Rubin, 11 S. La Salle St., Chicago, 3, Ill. Contract Awarded. **$375,000**. 40,000 sq. ft. PLANT addn. CHICAGO, ILL. Standard Stamping & Perforating Co., 49 and Kedzie Sts., Chicago, Ill. Barancik & Conte, 919 N. Michigan St., Chicago, 11, Ill., archts. Awarded Apr. 2. CD 9/26/50, under CA.

Baker Bros., 226 W. 2 St., Kewanee, Ill. Contract Awarded. **$440,000**, 2 story, Wethersfield High SCHOOL, KEWANEE, ILL. School Dist. 230, Kewanee, Ill. Awarded Mar. 30. CD 2/23.

The Austin Co., 510 N. Dearborn St., Chicago 10, Ill. Contract Awarded. **$150,000**. sewage treatment pharmaceuticals installation for PLANT, KALAMAZOO, MICH. The Upjohn Co., 301 Henrietta Ave., Kalamazoo, Mich. Awarded Mar. 29. CD 3/26/47.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION

Texas—RURAL DISTRIBUTION LINES—B.A. 5/2—Fannin County Electric Co-operative, Inc., c/o G. C. Hall, pres., Bonham. 13.56 mi. conversion work and 196.44 mi. reinf. existing lines Fannin, Grayson, Hunt and Collin Counties. $130,000. Plans deposit $10. Freese & Nichols, 407 Danciger Bldg., Fort Worth, Tex., engrs. CD 11/10/48.

BIDS ASKED—BUILDINGS

† **N. M., Los Alamos**—LABORATORY—B.A. 5/18—U. S. Atomic Energy Comn., Los Alamos, Laboratory TA-3 Proj. 1, Inv. No. 291, 51-91. $200,000-$300,000. Extended date. CD 3/30.

Tex., Houston—OFFICE—Bids Asked—Main-Tex Corp., Binz Bldg. demolition 12 story masonry type Binz Bldg. and erecting 2 story bsmnt. office with concrete pier and beam fdn. for 12 story 101x104 ft. $600,000. Sidney H. Morris & Assoc., 134 N. LaSalle St., Chicago, Ill., archts. CD 1/30/50.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **City, City Hall, Dubuque, Ia.**, rejected bids, storm sewerage sys. incl. 52,400 lin. ft. 48- to 84-in. concrete pipe, DUBUQUE, IA. Est. **$3,100,000**. CD 3/29.

† **Wright Bros. Electric Co.**, 405 Main St., San Antonio, Tex. Low Bidder, **$60,494**, underground electric sys. imprvs. rehabilitation, Inv. No. E-41-133-51-135, FORT SAM HOUSTON (San Antonio), TEX. U. S. Govt. Purch. & Contg. Officers, Bldg. 370, Fort Sam Houston, San Antonio, Tex. Bids April 10. CD 4/2.

CONTRACTS—HEAVY CONSTRUCTION

▲† **Russ Mitchell, Inc.** and **Bruce Constr. Co.**, 7421 Sylvania Station, Fort Worth, Tex. Contract Awarded. **$2,198,312**. power house and switch yard and other facilities at Whitney Dam and Reservoir Project, CIVENG 41-443-51-33, TEXAS. U. S. Eng., 1127 Texas and Pacific Bldg., Fort Worth, Tex. Bids Mar. 15. CD 3/20, under LB.

City, Big Spring, Tex. Own Forces. **$75,000**. WW rehabilitation unit, BIG SPRING, TEX. G. W. Dabney, city engr. CD 3/2.

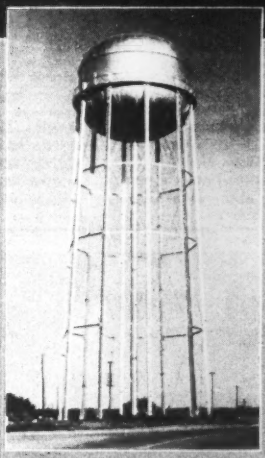
City, Big Spring, Tex. Own Forces. **$70,000**. sanitary sewer line, BIG SPRING, TEX. G. W. Dabney, city engr. CD 3/5.

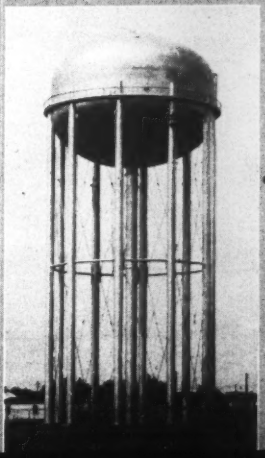
(Continued on page 79)

PITTSBURGH • DES MOINES

Stands for

BETTER WATER SERVICE *with* ELEVATED STEEL TANKS





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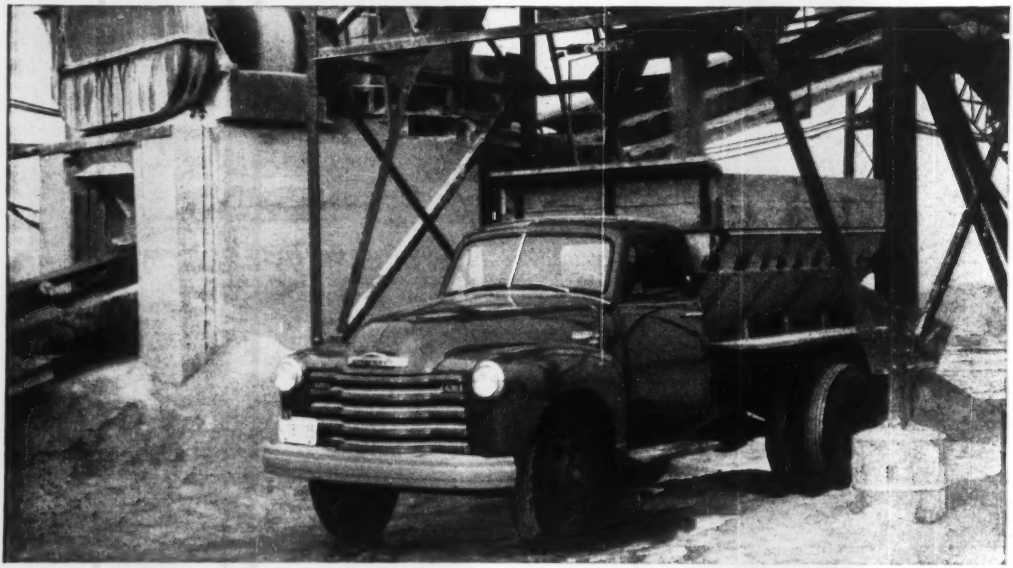
TWO GREAT VALVE-IN-HEAD ENGINES—the 105-h.p. Loadmaster or the 92-h.p. Thriftmaster—to give you greater power per gallon, lower cost per load • POWER-JET CARBURETOR — for smooth, quick acceleration response • DIAPHRAGM SPRING CLUTCH—for easy-action engagement • SYNCHRO-MESH TRANSMISSIONS—for fast, smooth shifting • HYPOID REAR AXLES—for dependability and long life • NEW TORQUE-ACTION BRAKES—for light-duty models • PROVED DEPENDABLE DOUBLE-ARTICULATED BRAKES—for medium-duty models • NEW TWIN-ACTION REAR BRAKES—for heavy-duty models • NEW DUAL-SHOE PARKING BRAKE—for greater holding ability on heavy-duty models • NEW CAB SEATS—for complete riding comfort • NEW VENTIPANES—for improved cab ventilation • WIDE-BASE WHEELS—for increased tire mileage • BALL-TYPE STEERING—for easier handling • UNIT-DESIGN BODIES—for greater load protection • ADVANCE-DESIGN STYLING—for increased comfort and modern appearance.



(Continued from page 76)

City, Galveston, Tex. Purchase and Hire. $85,000. asph. type street paving, GALVESTON, TEX. George E. Harris, city engr.

City, Galveston, Tex. Purchase and Hire. $95,000. electric traffic control system units, GALVESTON, TEX. George E. Harris, city engr. CD 5/12.

City, Garland, Tex. Own Forces. $75,000. sanitary sewers; $50,000; sewage treatment plant, GARLAND, TEX. Homer A. Hunter, 4704 Greenville St., Dallas, Tex., engr. CD 9/27.

City, Sulphur Springs, Tex. Own Forces. $35,000. addnl. distribution lines, SULPHUR SPRINGS, TEX. CD 3/30.

City, Sulphur Springs, Tex. Own Forces. Approx. $60,000. addnl. sanitary sewer lines, SULPHUR SPRINGS, TEX. CD 3/30.

Etlin E. Peterson, Box 208, Casper, Wyo. Contract Awarded, $312,918, est. $345,622. bridge consisting 4 continuous deck girder spans 103 ft.-124 ft.-124 ft. 103 ft. across Green River, grading, draining, base course surf. oil tr. by road mix method and misc. work 0.918 mi. Green River-Linwood Rd., F. A. Secondary Proj. S-264 (6) Sweetwater Co., WYOMING. State Hy. Comn., Cheyenne, Wyo. Bids April 6. CD 3/30.

Peter Kiewit Sons' Co., Box 875, Sheridan, Wyo. Contract Awarded. $273,681, est. $256,204, grading, curb, gutter, storm sewer base course surf. plant mix surf., course misc. work, 1,444 mi. Thermopolis Streets, Fed. Aid Proj. F 0169 (2) and F 213 (18) Combined, Hot Springs Co., WYOMING. State Hy. Comn., Cheyenne, Wyo. Bids April 6. CD 3/30.

CONTRACTS—BUILDINGS

Thomas S. Byrne, 1st Natl. Bank Bldg., Fort Worth, Tex. Contract Awarded. $850,000. (plasma) medicinal PLANT, FORT WORTH, TEX. Armour & Co., North Fort Worth, Tex. Wyatt C. Hedrick, Inc., First Natl. Bank Bldg., Fort Worth, Tex., archt. CD 4/5.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

Ore., Hood River—B.A. 5/1—Hood River Port Comn., Hood River reconstruct Oregon approach to Hood River-White Salmon Bridge, Plans deposit $15. Tudor Eng. Co., 681 Market St., San Francisco, Calif., engr.

BIDS ASKED—BUILDINGS

Wash., Colville—HOSPITAL—B.A. 5/2—Mount Carmel Hospital, Colville, 3 story, rein.-con. hospital. $700,000. J. P. O'Neill, Columbia Bldg., Spokane, Wash., archts. CD 11/3/50.

† Utah, Tooele—DECONTAMINATION, etc.—B.A. 5/8—U. S. Eng., 74 New Montgomery St., San Francisco, Calif., decontamination bldg., field operations bldg., medical test laboratory, munitions storage bldg., explosive igloos, munitions cold storage bldg., plant growing bldg., warehouse, exposure bldg. and chemical laboratory, in area D; munitions assembly bldg., surveillance bldg., office and change house, warehouse, paint and repair shop, cold transfer and hoist station, defusing station and open transfer shed, in area C, Dugway Proving Grounds. CD 4/9.

† Utah, Tooele — COMMISSARY, etc. — B.A. 5/15 — U. S. Eng., 74 New Montgomery St., San Francisco, Calif., commissary, post exchange, service station, enlisted men's club, guard house, school, chapel, hospital, nurses' quarters and attendants' dormitory in area E, Dugway Proving Grounds. CD 4/9.

LOW BIDDERS—HEAVY CONSTRUCTION

Grayson Constr. Co., Pocatello, Idaho, Low Bidder, $69,713, treatment plant, JEROME, IDAHO, City, City Hall, Jerome, Idaho. Hamilton & Voeller, Pocatello, Idaho, engrs.

Manson Constr. & Eng. Co., 821 Alaskan Way, Seattle, Wash., Low Bidder, $321,042, steel, concrete deck girder bridge over Portage Canal, Jefferson Co. WASHINGTON. State Hy. Dpt., Olypmia, Wash. Bids Apr. 10. CD 3/28.

▲† Guy F. Atkinson Co. and Ostrander Constr. Co., Cascade Bldg., Portland, Ore. and J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C. (McNary Dam Contractors), Low Bidder, $58,416,491, est. $55,058,359. completion McNary Dam, incl. construction remaining portions spillway, power house, abutments and appurtenant structures, CIVENG 45-165-51-49, OREGON-WASHINGTON. U. S. Eng., 19 E. Poplar St., Walla Walla, Wash. Bids April 12. CD 3/27.

LOW BIDDERS—BUILDINGS

▲† Waale-Camplan Co., 2100 S. W. Jefferson St., Portland, Ore., Low Bidder, $2,376,951 addnl. bldgs., rehabilitation existing buildings, utilities, Serial No. ENG 45-108-51-125, NORTH RICHLAND, WASH. U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids April 10. CD 3/28.

CONTRACTS—HEAVY CONSTRUCTION

† J. Nottingham, Boise, Idaho. Contract Awarded. $66,242, replacing 29,300 ft. pipe at Air Force Base and Bennett Park Housing, Inv. 51-140, MOUNTAIN HOME, IDAHO. U. S. Eng., 4735 E. Marginal Way, Seattle, 4, Wash. Bids Apr. 7.

† A. Shoonmaker Co., Sausalito, Calif. Contract Awarded. $95,792, electrical generating equip. for Dugway Proving Grounds, equip. must consist of no less than 2 units 600 kw capacity each, TOOELE, UTAH, U. S. Eng., 74 New Montgomery St., San Francisco, Calif.

Pacific Sand & Gravel Co., Centralia, Wash., Contract Awarded, $214,962, draining, grading, surf. 2.5 mi. Secondary State Hy. 13-A, Raymond West F.A.S. S-0453 (1), Pacific Co., WASHINGTON. State Hy. Dpt., Olympia, Wash. Bids Apr. 10. CD 3/28.

This Steel Floor actually *Saved* Steel

Replacing a worn wood plank floor with USF Structural Plate Bridge Flooring actually saved steel. The deep box corrugated USF sections welded directly to the stringers stiffened the entire structure enough to salvage it for years. As a foundation for asphalt surfacing, the floor replacement also practically ended further extensive floor maintenance. Because of USF's wide section and unique design, only a minimum of field welding, equipment, and erection manhours were required. All these savings are vital now!

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MANUFACTURERS OF

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USS STEEL

USF UNITED STEEL FABRICATORS, INC.

WOOSTER, OHIO

MORE WORK from SHOVELS

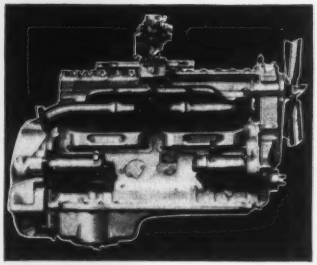
with Less Work for operators

Keeping the trucks rolling to the crushers, near Wilson, Mich., this Link-Belt Speeder, powered by a 6-SRKR Waukesha Engine, is owned by Menominee County Road Commission, Menominee, Mich.

WAUKESHA POWER

● Digging . . . loading . . . lifting—whatever you want your shovels to do—Waukesha-powered shovels will turn out more work, steadier and faster. Easier on the operator, too. And less wearing on the shovel. That cuts costs of production, while upkeep stays low.

If it's a Waukesha Engine—Diesel, or gasoline—it's smooth, as well as speedily responsive. Snaps right into it, to meet the operators' every demand.



WAUKESHA 6-SRKR Engine—6 cylinders, 4⅜-in. x 5⅛-in., 517 cu. in. displacement.

The engine shown is a Waukesha SRKR Six and operates on gasoline. It has a precision balanced crankshaft of drop forged steel, heat-treated, running in seven removable type precision bearings and is supported in a very deep *girder* crankcase for smoothness and freedom from vibration. With separate cast-en-bloc truncated cylinders, heavy-duty aluminum pistons, and matched connecting rods. Either with up-draft or down-draft carburetors the Waukesha Blue Flame Manifold gives lively throttle performance. Bulletin 1124 gives this engine's features in detail.

Waukesha *Diesel* Power, particularly for shovels, is described in Bulletins 1415 and 1532.

124

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

Tomei Constr. Co., 4734 Orion Ave., Los Angeles, Calif., Contract Awarded, $149,213, Sepulveda Blvd. by-pass and appurtenant works, LOS ANGELES, CALIF. Dpt. Airports, 5800 Avion Dr., Los Angeles, Calif. Bids Mar. 30. CD 5/1. 5/16/45.

CONTRACTS—BUILDINGS

Fairbanks-Morse & Co., 153 West 2nd South St., Salt Lake City, Utah, Contract Awarded, Approx. $300,000, est. $250,000. enlarging municipal POWER PLANT, incl. 2,000 kw. generator powered by diesel engine, MURRAY, UTAH, City, c/o J. Clifford Hansen, mayor, Murray, Utah. Bids Feb. 23.

▲ Del E. Webb Constr. Co., 302 S. 23 Ave., Phoenix, Ariz., Contract Awarded, $4,813,500, 400-bed 5 story HOSPITAL, PHOENIX, ARIZ. Sisters of Mercy, St. Joseph's Hospital, Phoenix, Ariz. Lescher & Mahoney, Title & Trust Bldg., Phoenix, Ariz., archts. CD 3/27, under LB.

A. Balch, 8050 35 Ave. N. E., Seattle, Wash. Day Labor, $320,000, 32 HOUSES, in areas adjacent to SEATTLE, WASH. Thomas, Grainger & Thomas, Arcade Bldg., Seattle, Wash., archts.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

† Alaska—FIELD MAINTENANCE BLDG., etc.—B.A. 5/8—U. S. Eng., Flamingo Room, New Washington Hotel, Seattle, Wash., 3 one story bldgs. concrete block constr., one field maintenance and artillery shop at Ladd Air Force Base; one special maintenance shop and one ordnance shop at Eielson Air Force Base, Inv. No. S 95-057-51-88. Plans deposit $50. CD 3/14.

† Alaska—HANGAR—B.A. 5/9—U. S. Eng., Flamingo Room, New Washington Hotel, Seattle, Wash., one 300x300 ft. structural steel on rein.-con. fdn. hangar at Eielson Air Force Base; Inv. No. S 95-507-51-41. Plans deposit $50. CD 3/14.

BIDS ASKED—BUILDINGS

† Alaska, Fort Richardson—BAKERY—B.A. 5/11—U. S. Eng., (APO 942, c/o PM, Seattle, Wash.), Anchorage, 1 story, 104x109 ft., concrete block or rein.-con. bakery, Inv. No. S 95-507-51-87. Plans deposit $25. CD 11/27.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† J. H. Pomeroy & Co., Inc., 333 Montgomery St., San Francisco, Calif., Low Bidder, $4,793,966, est. $5,438,963, fourteen 8-family row type quarters at Eielson Air Force Base and 23 eight-family row type quarters at Ladd Air Force Base, Inv. No. S95-507-51-93, ALASKA. U. S. Eng., (APO 942 c/o PM, Seattle, Wash.) Anchorage, Alaska. Bids April 10. CD 3/15.

CANADA

BIDS ASKED—BUILDINGS

▲ Ont., London—HOSPITAL—B.A. 5/2—John M. Watt, archt., 343 Richmond St., London, Ont., 8 story, Y-shaped brick, steel, concrete hospital addn., for Victoria Hospital Trust, William Loveday, chn., London, Ont. Extended date. CD 1/9.

CONTRACTS—HEAVY CONSTRUCTION

Chisholm Constr. Co., Antigonish, N. S. Contract Awarded, $124,558. sewerage sys., ANTIGONISH, N. S. Town, Antigonish, N. S. Awarded April 10.

CONTRACTS—BUILDINGS

Gingras Constr., R. R. No. 2, Trenton, Ont. Contract Awarded. $100,000. 1 story, 100x140 ft. concrete block, 15,000 sq. ft. floor space food FACTORY, BRIGHTON, ONT. Dyson's Ontario Ltd., 1139 McDermot Ave., Winnipeg, Man. Awarded April 10. CD 3/22.

Couture & Toupin, Montreal Trust Bldg., Winnipeg, Man. Contract Awarded. $550,000. 3 story, bsmnt., 50x136 ft., rein.-con., brick HOSPITAL addn., FORT FRANCES, ONT. Sisters of Charity, Fort Frances General Hospital, Fort Frances, Ont. Bids Mar. 9, awarded April 10. CD 2/26.

▲ W. H. Cooper Constr. Co. Ltd., 21 Hunter St. E., Hamilton, Ont. Contract Awarded. Aprox. $1,500,000. 4 and 5 story, 15,000 sq. ft., PLANT expansion, HAMILTON, ONT. Canadian Westinghouse Co. Ltd., 286 Sanford Ave. N., Hamilton, Ont. Awarded April 10. CD 3/21.

Dunker Constr. Ltd., 251 King St. W., Kitchener, Ont. Contract Awarded. $250,000. 1 story, 125x185 ft., brick, concrete block electrical porcelain FACTORY, WATERLOO, ONT. Volta Insulator Co., Ltd., Waterloo, Ont. Awarded Apr. 10.

Beaumier & Morin Ltd., P. O. Box 218, Cap de la Madeleine, Que. Contract Awarded. $600,000. 2 addnl. wings to Cloutier HOSPITAL, CAP DE LA MADELEINE, QUE. Rev. Souers Grises de la Croix, Sussex and Water Sts., Ottawa, Ont. A. Lacoursiere, 101 4 St., Shawinigan Falls, Que., archts.

Fred Beaumier, 33 St. Philippe St., Cap de la Madeleine, Que. Contract Awarded. Approx. $700,000. JUVENAT, CHAMPLAIN, QUE. Freres St. Gabriel, 1665 Blvd. Gouin E., Montreal, Que. A. Lacoursiere, 101 4 St., Shawinigan Falls, Que., archts. CD 12/7.

Deakin & Stewart Ltd., 1440 St. Catherine St. W., Montreal, Que. Contract Awarded. Approx. $320,000. plating PLANT exten., MONTREAL, QUE. Crane, Ltd., 3800 St. Patrick St., Montreal, Que. Bids Apr. 4. CD 4/5.

▲ Komo Constr. Ltd., 1500 St. Vallier St., Quebec City, Que. Contract Awarded, Approx. $2,000,000. heating plant, grading, etc. at new Laval University, Ste. Foy, QUEBEC CITY, QUE. Laval University, Ste. Foy, Quebec City, Que. P. E. Rousseau, 308 St. John St., Quebec City, Que., archt.

RAYMOND

versus OLD MAN RIVER

DRIVING 3,700 RAYMOND PRECAST PILES FOR MORGANZA FLOODWAY CONTROL . . .

Major link in the flood-control system on lower Mississippi River is the 4,200-foot Morganza Floodway Control Structure, 42 miles northwest of Baton Rouge, La. Its 125 bays will have diversion capacity of 600,000 sec.-ft. into spillway at flood stages.

For the foundations Raymond is casting and driving 3,734 precast reinforced concrete piles, in lengths of 80 to 120 feet. 95 percent are being driven on 2-on-1 batter.

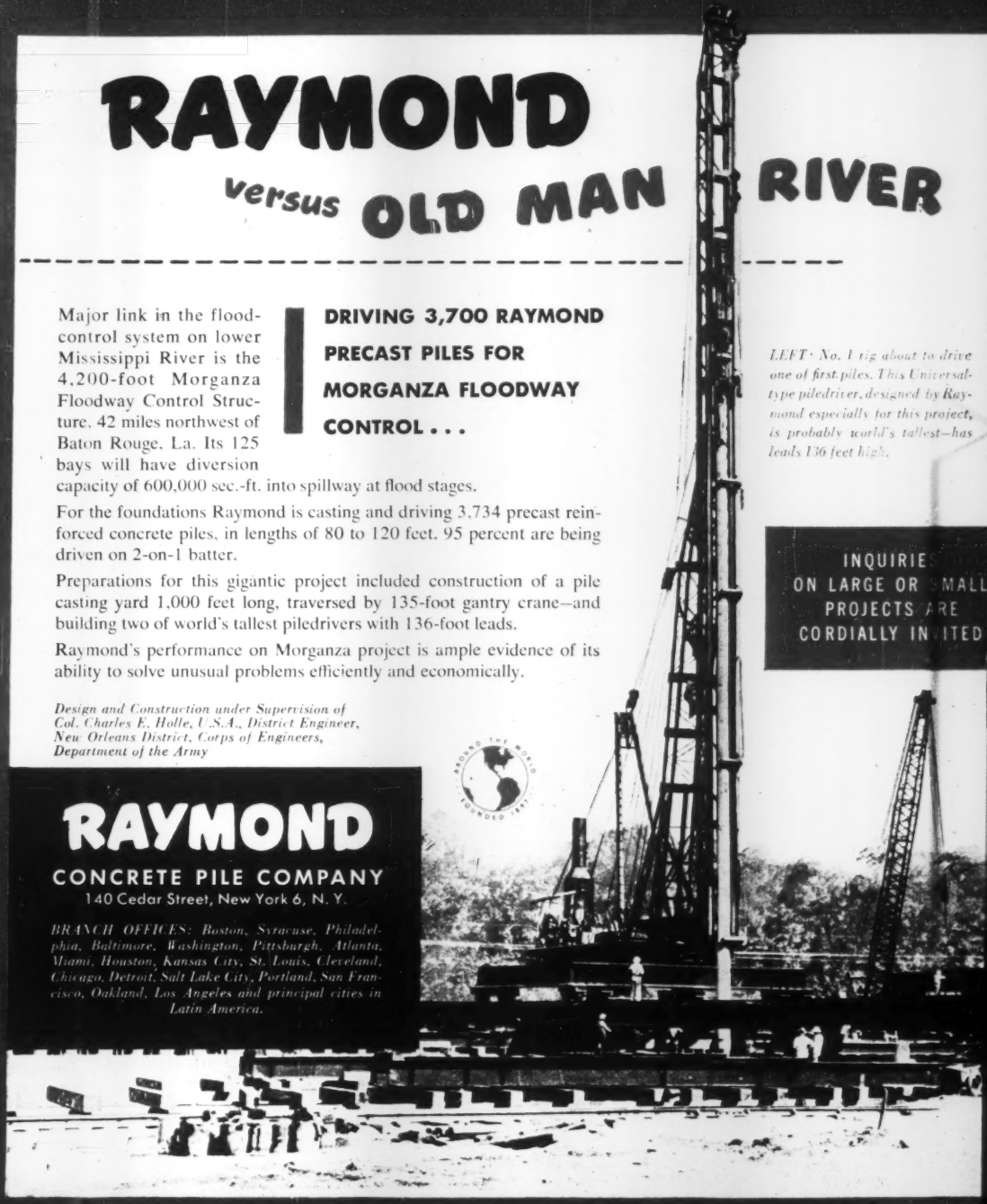
Preparations for this gigantic project included construction of a pile casting yard 1,000 feet long, traversed by 135-foot gantry crane—and building two of world's tallest piledrivers with 136-foot leads.

Raymond's performance on Morganza project is ample evidence of its ability to solve unusual problems efficiently and economically.

Design and Construction under Supervision of Col. Charles E. Holle, U.S.A., District Engineer, New Orleans District, Corps of Engineers, Department of the Army

LEFT: No. 1 rig about to drive one of first piles. This Universal-type piledriver, designed by Raymond especially for this project, is probably world's tallest—has leads 136 feet high.

INQUIRIES ON LARGE OR SMALL PROJECTS ARE CORDIALLY INVITED



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CONCRETE PILE COMPANY
140 Cedar Street, New York 6, N. Y.

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THE SCOPE OF RAYMOND'S ACTIVITIES . . . includes, in addition to borings for soil investigation, every recognized type of foundation construction—concrete, composite, precast, steel, pipe and wood piles. Also caissons, underpinning, construction involving shore protection, shipbuilding facilities, harbor and river improvements, and cement-mortar lining of water, oil and gas pipelines 4" to 144" in diameter by Centriline Corp., a Raymond subsidiary.

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The NEW SHELL ROTELLA OIL

(Extra Heavy Duty Type)

"... exceeds every accepted performance standard for oils in its class"

OUTSTANDING PISTON CLEANLINESS

The new Shell Rotella Oil stands out in the very top bracket with respect to Piston Cleanliness, providing convincing proof of its ability to keep contaminants out of the critical zone in which wear is concentrated.

MUCH LOWER RING DEPOSITS

Ring-plugging tests are really tough, yet new Shell Rotella Oil came through stiff competition with a remarkably low ring deposit rating ... far below the established passing mark!

GREATER ENGINE LIFE

Recognized laboratory engine tests are important in establishing qualifications of lubricants to meet strict requirements. More important to operators, however, is the *tremendous increase in engine life* and the consequent reduction in maintenance expense and time out-of-service that the new Shell Rotella Oil is contributing to fleet operation under today's conditions.

NEW SHELL ROTELLA OIL ...

Stepped up cleaning action...

Even greater anti-wear protection

. . . anticipating the needs of today's high performance fleet engines

TODAY'S hauling conditions are imposing greatly increased demands upon fleet engines . . . and the lubricants selected to keep them running. At the same time these high-performance engines are expected to turn in ever-increasing mileage records between overhauls.

For these reasons, and because even greater performance will probably be expected as time goes on, the detergent-dispersant and anti-wear qualities of Shell Rotella Oil have been markedly increased.

Operators using Shell Rotella Oil in the past will find an even greater latitude in maintenance procedures.

4-WAY LIFE EXTENSION FOR BUSY ENGINES

1. Remarkable detergent-dispersant action

The ability to suspend contaminants has been deliberately stepped up in the new oil. Field tests on vehicles, in widely varying kinds of service, prove conclusively that this greater detergent-dispersant action extends mileage between overhauls.

2. Drastic sludge reduction

Operators who have been having sludge troubles . . . with clogged pump screens, burned out bearings, or clogged oil ways . . . are urged to find out for themselves how remarkably clean those engines will remain while using this new anti-sludge Shell Rotella Oil.

3. Positive Anti-acid action

New Shell Rotella Oil directly counteracts the acid action of fuel combustion products in the vital top-cylinder zone . . . with correspondingly great reduction in wear. This protection is extremely important in the operation of intermittently loaded engines.

4. Extends time between engine overhauls

New or reconditioned engines . . . operating on fuels of widely-varying quality . . . in all kinds of fleet service . . . have demonstrated an important extension of in-service time. *This gain results from improvement in several basic respects: freedom from sludge and ring-clogging, increased valve life and greatly reduced wear.*

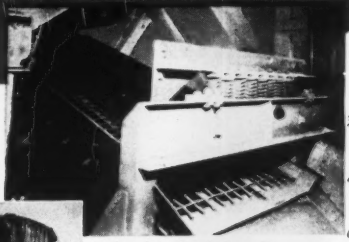
for all heavy duty fleet engines

SHELL

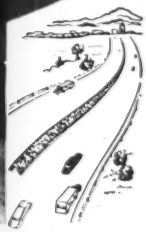
CRUSHING 500,000 TONS for Pennsylvania Turnpike

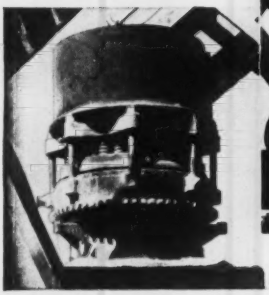
Eastern Extension

TELSMITH

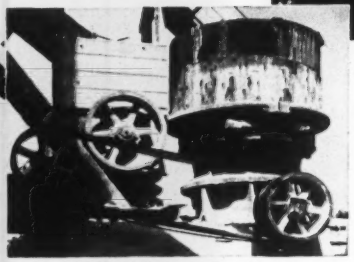


Telsmith Scalping Screen



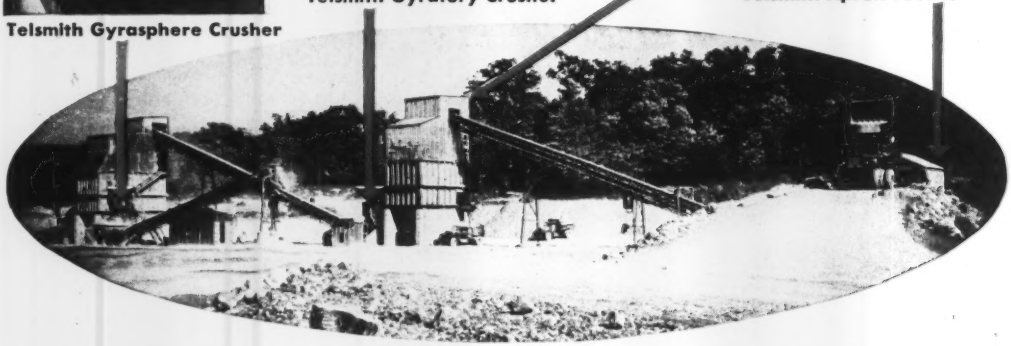


Telsmith Gyrasphere Crusher



Telsmith Jaw Crusher
Telsmith Gyratory Crusher

Telsmith Jaw Crusher
Telsmith Apron Feeder



Building the Pennsylvania Turnpike Eastern Extension brought an abnormally large demand for aggregate in Lebannon and Lancaster Counties. Pennsylvania Aggregates, Inc., built this completely new, Telsmith crushing plant at Cornwall to supply part of this temporary demand—about 500,000 tons in 15 months' time. Typically Telsmith, plant operation is smooth; up-keep is low; and production high—200-250 tons hourly, making a maximum of minus 2¼" in four different sizes.

TELSMITH Equipment in This Plant

42" x 14' Heavy-Duty Apron Feeder • 30" x 42" Roller Bearing Jaw Crusher • 30" x 150' Primary Conveyor • 5' x 12' 2-Deck Heavy-Duty Scalping Screen • 10" x 36" Roller Bearing Jaw Crusher • 13B Gyratory Crusher • 30" x 149' Conveyor • 5' x 12' 3-Deck Vibro-King Sizing Screen • No. 36 Fine Crushing Gyrasphere Crusher • 24" x 83" Return Conveyor.

Get Bulletin 266—Telsmith Complete Plant Service. Q-22

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CONSTRUCTION REPORTS-Second Section

NEW ENGLAND

BIDS ASKED—BUILDINGS

Conn., Darien—SCHOOL, etc.—B. A. 4/30—Bd. Educ., Renshaw Rd, Darien, high school addns., alterations $450,000. Extended date. CD 3/28.

▲ **Conn., New Britain**—SCHOOL—B. A. 5/3—City Bd. Educ., 27 Hillside Pl., school, Slater Rd. $1,100,000. Plans deposit $50. Extended date. CD 3/13.

LOW BIDDERS—HEAVY CONSTRUCTION

Lambert Constr. Comp., Inc., White River Junction, Vt. Low Bidder, $512,738, road mix pavement 4.725 mi. N. H. Route 9, F 319 (3)***Martin Mailet, Salisbury, Mass., $70,476, hot asph. 1.216 mi. asph. and peastone over existing concrete 0.429 mi. F 262 (2), Newington-Dover***Landers & Griffin, Inc., 800 Islington St., Portsmouth, N. H., $147,505, asph. and peastone resurf. 52.57 mi. Proj. G.***D. E. Ambrose & Sons and Mooney, Swett & Bundy, Meredith, N. H., $139,248, surf. treated grav. 2.315 mi. S 273 (2), Wilmot, NEW HAMPSHIRE. Dpt. Pub. Wks. & Hys., Concord, N. H. Bids Apr. 6. CD 3/28.

MIDDLE ATLANTIC

BIDS ASKED—BUILDINGS

▲ **Pa., Harrisburg**—HOUSING—B.A. 5/2—Harrisburg Housing Auth., City Hall, construct 500-unit housing in area bounded by Sycamore, Nace, 14 Sts. and Cloverly Terrace, $4,800,000. Plans deposit $50. Wm. L. Murray, 1600 N. 2 St., archt. CD 8/17.

Pa., Phila.—LAUNDRY—B.A. 5/2—General State Auth., 18 and Herr Sts., Harrisburg, construct laundry bldg. at Phila. (Byberry) State hospital, $743,000. Plans deposit $15. Extended date. Day & Zimmerman, 1700 Sansom St., Phila., engrs. CD 3/28.

Md., Baltimore—HEALTH—B.A. 5/5—City, Bureau Bldg. Constr., 410 Municipal Bldg., Zone 2, convert 3 story school into Southern Health Dist. Bldg., Bank St., $500,000. Plans deposit $75. Hal A. Miller & Assoc., 2118 Maryland Ave., Zone 18, archts. R. E. L. Williams, 410 Municipal Bldg., Zone 2, bldg. constr. engr. CD 8/18.

Md., Camp Detrick—HOUSING—Bids Asked—U. S. Eng., 1216 Federal Office Bldg., 90 Church St., New York 7, N. Y., construct, manage, finance 225 housing units, Camp Detrick, Frederick.

Pa., Pittsburgh—WAREHOUSE—Bids Asked—Joseph Horne Co., Penn and Stanwix Sts., (selected list bidders) 1 story, approx. 150x170 ft., brick, steel warehouse. $200,000. Abbott-Merkt & Co., 10 E. 40 St., New York, N. Y., archts. CD 6/16.

LOW BIDDERS—HEAVY CONSTRUCTION

McElwee-Courbis Constr. Co., 503 Market St., Camden, N. J. Low Bidder, $174,080, incinerator; $759,991, treatment plant BLOOMSBURG, PA. Council Chamber, Town Hall, Bloomsburg, Pa. Bids Mar. 29, CD 3/15.

LOW BIDDERS—BUILDINGS

▲ **Bd. Educ., Union Free School Dist. 15,** Junior High School, Forest Ave., Glen Cove, N. Y., defeated referendum, repairs and addn. to Junior HIGH SCHOOL, GLEN COVE, N. Y. $1,300,000. Project in abeyance. CD 3/21, under LB.

Weinstein Constr. Co., 573 Talmadge St., Akron, O. Low Bidder, $754,300, Malleable Heights HOUSING, SHARON, PA. Mercer County Housing Auth., Farrell, Pa. Clepper & Mallorie, 72 Vine St., Sharon, Pa., archts. CD 2/9, under LB.

CONTRACTS—HEAVY CONSTRUCTION

▲† **Arundel Corp.,** foot of Fulton St., Brooklyn, N. Y., Contract Awarded. $1,223,810. Dredging and rock removal in Newark Bay vicinity of Bergen Point, NEW JERSEY. U. S. Eng., 80 Lafayette St., New York, 13, N. Y. Bids Mar. 27. CD 4/10, under LB.

▲† **Amercian Dredging Co.,** 12 S. 12 St., Phila., Pa. Contract Awarded, $1,475,240, dredging Marcus Hook Anchorage, Marcus Hook, Delaware Co., PENNSYLVANIA. U. S. Eng., 121 N. Broad St., Phila., Pa. CD 4/21/44.

CONTRACTS—BUILDINGS

Brownsville Boys Club, Inc., 417 Christopher Ave., Brooklyn 12, N. Y. Separate Contracts. Approx. $500,000. CLUBHOUSE, 598-626 Christopher Ave., BROOKLYN, N. Y. CD 10/2.

▲ **Lafayette Gardens, Inc.,** 2190 Boston Rd., New York 60, N. Y. Separate Contracts, $1,500,000. APARTMENT, 328-44 Haven Ave. and 1338-68 Riverside Dr., NEW YORK, N. Y. CD 10/5.

† **Arthur Venneri,** 300 North Ave., Westfield, N. J. Contract Awarded, $512,887, rehabilitation buildings, CAMP JOYCE KILMER, N. J. Dpt. Army, 121 N. Broad St., Phila., Pa.

▲ **Fred Meagher,** 225 S. 69 St., Upper Darby, Pa. Separate Contracts. Approx. $2,200,000. RESIDENTIAL DEVELOPMENT, Chichester and Smithers Rds., CHESTER, PA. James G. Ludwig, 225 S. 69 St., Upper Darby, Pa., archt.

Daniel Realty Co., 915 Delaware Ave., Phila. Pa. Separate Contracts. $848,000. RESIDENTIAL DEVELOPMENT, Grant Ave. DOWNINGTON, PA.

Smelo-Peters-Milgram, Inc., 739 Disston St., Phila., Pa. Separate Contracts. Approx. $500,000. RESIDENTIAL DEVELOPMENT, Warminster Rd., HATBORO, PA.

▲ **Oakland Housing Co.,** Nathan Slonimsky, Western Saving Fund Bldg., Phila., Pa. Separate Contracts. $1,080,000. RESIDENTIAL DEVELOPMENT, Hunting Park Ave. etc., PHILA. PA.

John McShain, Inc., 17 and Spring Gardens Sts., Phila., Pa. Contract Awarded, $800,000. Sacred Heart HOME, PHILA., PA. St. Rose of Lima Dominican Sisters, 4200 York Rd., Phila. Pa. Bids Feb. 27. CD 2/15.

Finestone Bros., 514 E. Roosevelt Bldg., Phila., Pa. Separate Contracts. $549,000. RESIDENTIAL DEVELOPMENT, Bristol St. and Hunting Park Ave., PHILA., PA. Lewis J. Cowan, 1505 Pine St., Phila., Pa., archt.

▲ **Secane Homes, Inc.,** 217 S. 69 St., Upper Darby, Pa., Separate Contracts, $2,000,000. RESIDENTIAL DEVELOPMENT, Secane, Ridley Twp., SECANE, PA.

Weinstein Constr. Co., 573 Talmadge St., Akron, O. Contract Awarded. $754,300. 100 unit HOUSING development, known as Malleable Heights Project, SHARON, PA. Mercer County Housing Auth., Sharon, Pa. CD 4/13, under LB.

Charles A. Hinman, Crisfield, Md. Contract Awarded. $500,000. 1 story brick block, steel, 50,000 sq. ft. FACTORY, CRISFIELD, MD. Charles D. Briddell Co., Co., Inc., Crisfield, Md. CD 4/13.

E. T. Connaway, Lewes, Del. Contract Awarded, $650,000. RESIDENTIAL DEVELOPMENT, DELMAR, DEL. Delmar Manor Development, Delmar, Del.

McAdams & Greenwood, 69 and Walnut Sts., Upper Darby, Pa. Separate Contracts, Approx. $500,000. RESIDENTIAL DEVELOPMENT, Church St., etc., WILMINGTON, DEL.

SOUTH

BIDS ASKED—BUILDINGS

Va., Martinsville—SCHOOL—B.A. 5/1—At office, School Supt., Henry Co., Martinsville, Drewry Mason High School, with auditorium and shop. Approx. $500,000. Plans deposit $15. J. Coates Carter, 218 Main St., archt.

Va., Cumberland—SCHOOL—B.A. 5/2—At office T. J. McIlwaine, supt. Schools, Cumberland Co. Court House, Cumberland Negro School. $500,000. Plans deposit $15. Dixon & Norman, 1103 E. Main St., Richmond, archts.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **Industrial Contg. Co.,** 3050 4 Ave. S., Minneapolis, Minn. Low Bidders, $5,207,832, substructure; Louis Garavaglia, Interzone, Detroit, Mich., $4,137,784, superstructure, for 4,250 ft. low level bridge from foot of Gilmore St. across St. Johns River to Southside of Jacksonville, Part of $42,000,000 express highway system, FLORIDA. State Rd. Dpt., George Washington Hotel, Jacksonville, Fla. Bids Apr. 12. CD 4/4.

LOW BIDDERS—BUILDINGS

C. L. Lewis, Lynchburg, Va. Low Bidder. $753,753. HOSPITAL, near SOUTH BOSTON, VA. Halifax Community Hospital, South Boston, Va. Stanhope S. Johnson, Lynchburg, Va., archt. Bids Apr. 12. CD 4/9.

Kuhn Constr. Co., Kanawha Valley Bldg., Charleston, W. Va. Low Bidder. $674,600. 2 story U-shaped, steel, brick, stone PHYSICAL EDUCATION BLDG. School for Deaf & Blind, ROMNEY, W. Va. State Bd. Control, Charleston, W. Va. CD 2/8/46.

CONTRACTS—HEAVY CONSTRUCTION

† **Babcock & Wilcox,** Packard Bldg., Phila., Pa. Contract Awarded, $589,950. L-shaped water charge vessel, LANGLEY AIR FORCE BASE, VA. National Advisory Com. for Aeronautics, Langley Air Force Base, Va.

Carlton Contg. Co., Box 731, Albany, Ga., Contract Awarded. $600,247 Proposal A, bit. tr., plant mix 9.452 mi. 1 mi. Anniston Bypass F.I. 291 (2), Calhoun Co.; W. A. McWaters, 2 Clayton St., Montgomery, Ala., $900,231, Proposal A, surf. tr. 9.672 mi. U.S. 31 from Lacon north, F.I. 25 (2) and S 3 (4), Morgan Co., ALABAMA. State Hy. Dpt., 500 Dexter Ave., Montgomery, Ala. Bids Mar. 9. CD 3/28, under LB.

▲ † **Edward E. Morgan Co. Inc.,** and **Jones & Gillis, Inc.,** 2951 Canton Ave., Jackson, Miss. Contract Awarded. $3,758,255. constr. Grenada Dam, Grenada, MISSISSIPPI. U. S. Eng., P.O. Box 80, U. S. P.O. and Court House, Vicksburg, Miss. Bids Apr. 3. CD 2/15.

† **Central States Dock & Dredging Co.,** Box 366, Humboldt, Ia. Contract Awarded. $610,488. dredging Smithland Landing cutoff on Black River near Jonesville, LOUISIANA. U. S. Eng., P. O. Box 60, Vicksburg, Miss. CD 4/11, under L. B.

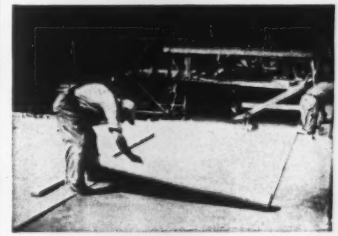
Gordan Walker, Box 287, Baton Rouge, La. Contract Awarded. $848,831. bridge across Pearl River between Bogalusa, La. and Poplarville, Miss., LOUISIANA and MISSISSIPPI. State Hy. Dpt., Baton Rouge, La. CD 4/2, L. B.

CONTRACTS—BUILDINGS

▲ **English Constr. Co.,** Altavista, Va. Contract Awarded, $1,222,000. construct RECEIVING BLDG. at Southwestern State Hospital, MARION, VA. State of Virginia, Richmond, Va. Bids Mar. 13. CD 3/26, under LB.

(Continued on page 87)

SISALKRAFT "BIG BUILDING" PROTECTION AT SMALL COST



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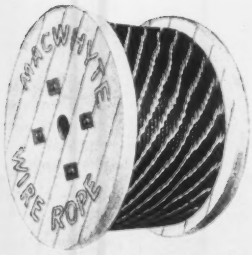

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(Continued from page 85)

Barge-Thompson Co., 136 Ellis St. N. E., Atlanta, Ga. Contract Awarded. $850,000. 3 story OFFICE and EXCHANGE bldg., PADUCAH, KY. Southern Bell Telephone & Telegraph Co., 51 Ivy St. N. E., Atlanta, Ga.

MIDDLE WEST

BIDS ASKED—BUILDINGS

Wis., Menomonie—HOUSING—B.A. 5/2—Housing Auth. of City of Menomonie, C. L. Rich, chn., 60 dwelling units in housing and maintenance bldg., $500,000. Plans deposit $20. Ingemann & Bergstedt, 345 Minnesota St., St. Paul, Minn., archts. CD 6/22.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ State Div. Hys., Springfield, Ill., rejected bids Mar. 30, 4.25 mi. Alexander Co., L.B. $425,891; 4.63 mi. Coles Co., L.B. $248,541; 7.14 mi. Cook Co., L.B. $198,507; 4.98 mi. Fayette Co., L.B. $506,795; 0.27 mi. Hamilton Co., L.B. $69,654; 19.31 mi. Iroquois and Ford Counties, L.B. $507,995; 21.41 mi. Jefferson and Marion Counties, L.B. $369,682; 14.25 mi. Lake Co., L.B. $323,619; 6.3 mi. Madison Co., L.B. $178,863; 6.16 mi. Madison Co., L.B. $90,804; 10.22 mi. Union Co., L.B. $217,558; 12.6 mi. Union Co., L.B. $396,306; 4.9 mi. Cole Co., L.B. $94,843, ILLINOIS. CD 4/4, under LB.

Michael Pontarelli, 4248 N. Kilpatrick St., Chicago, 41, Ill. Low Bidder. $722,080. auxiliary outlet 6,100 ft. auxiliary outlet sewers Contr. 1, CHICAGO, ILL. City, City Hall, Zone 2, Ill. CD 3/23, under LB.

LOW BIDDERS—BUILDINGS

Greene & Gust, 1154 W. Lunt St., Chicago, 26, Ill., Low Bidder. $705,326. community high SCHOOL, CRYSTAL LAKE, ILL. School Dist., 155, Franklin and Wallace Aves. Crystal Lake, Ill. Bids Mar. 26. CD 3/16.

▲ O. W. Burke Co., 1032 Fisher Bldg., Detroit, Mich. Low Bidder. $3,797,953. 6 story, medical science unit, incl. classrooms and laboratory, COLLEGE of Medicine, St. Antoine St., DETROIT, MICH. Wayne University, 4841 Cass Ave., Detroit, Mich. Bids Apr. 4 CD 3/8.

CONTRACTS—HEAVY CONSTRUCTION

▲ Illinois Terminal R. R. Co., J. L. Loida, ch. engr., 710 N. 12 Blvd., St. Louis, 1, Mo. Own Forces, $1,000,000. general imprvs. to McKinley Bridge connecting Venice, Ill. and St. Louis, Mo., over Mississippi River, incl. steel decking for roadbed, etc., ILLINOIS and MISSOURI. CD 10/3.

Streu Constr. Co., 2004 14 St., Two River, Wis., Contract Awarded, $599,305, Contrs. 1 and 3 c. conc. 13.606 mi. Platteville-Lancaster Rd., S. T. Hys. 81 and 35 and U. S. Hy. 61. Projs. S 0101 (4) and T 08-1 (3), Grant Co. WISCONSIN State Hy. Comn., Madison, Wis. Bids Apr. 10. CD 4/16, under LB.

CONTRACTS—BUILDINGS

▲ Roediger Constr. Co., Inc., 1737 Euclid Ave., Cleveland, O. Contract Awarded. Approx. $1,232,000. 6 story, HOSPITAL, laboratory facilities, administrative offices, light-faced brick trimmed with granite and limestone, Central Ave., CLEVELAND, O. Sisters of Charity of St. Augustine, 14808 Lake St., Cleveland, O. George S. Rider Co., Terminal Tower, Cleveland, O., archt. and engr. CD 11/22/49.

▲† Dawson-Evans Constr. Co., 5300 Vine St., St. Bernard, O. Contract Awarded, $1,555,600. Dorothy Lane facility WAREHOUSES, DAYTON, O. General Services Admin., Pub. Bldgs. Service, General Services Bldg., 19 and F Sts. N.W., Wash. 25, D. C. Bids Mar. 21. CD 3/30, under LB.

▲† Joseph J. Duffy Co., 4904 N. Elston St., Chicago, Ill. Contract Awarded, $2,333,141, Bid 2 Wolf Lake WAREHOUSE, HAMMOND, IND. General Services Admin., F St. between 18 and 19 Sts. N.W., Wash., 25, D. C. Bids Mar. 20, awarded Apr. 13. CD 3/29, under LB.

Bulley & Andrews, 2040 W. Harrison St., Chicago, 8, Ill. Contract Awarded. $550,000. 60,000 sq. ft. FACTORY addn., CHICAGO, ILL. KinKead Industries, Inc., 5860 N. Pulaski St., Chicago, 30, Ill. Bids Apr. 6. CD 3/27.

Wm. H. Koenig, 228 N. LaSalle St., Chicago, Ill., Contract Awarded, Approx. $500,000, 1 story, brick, stone electric relays, assembly PLANT, CHICAGO, ILL. C. P. Claire & Co., 4710 Sunnyside St., Chicago, Ill. Bids Feb. 5. CD 2/2.

▲ Whitlenberg Constr. Co., 2214 Floyd St., Louisville, Ky. Contract Awarded, $15,000,000, general renovation and repairs to facilities, new construction at Plant 2, Hoosier Ordnance Plant, new construction at main plant, Indiana Ordnance Plant, CHARLESTOWN, IND. U. S. Eng., 830 W. Broadway, Louisville 1, Ky. Hazelet & Erdal, 403 Commerce Bldg., Louisville, Ky., engrs. and archts. CD 2/14.

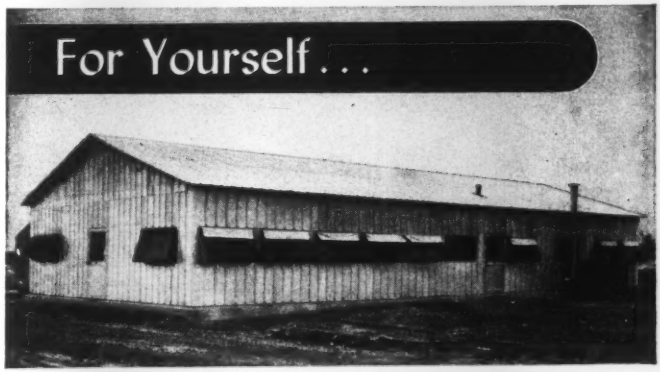
Marbar Homes, Inc., 6317 Guilford St., Indianapolis, Ind. Own Forces, $600,000. 60 HOMES, INDIANAPOLIS, IND.

▲† Penker Constr. Co., 1030 Summer St., Cincinnati, O. Contract Awarded, $4,000,000, 4 testing bldgs., railroad spurs for targets, renovation, etc., MADISON, IND. U. S. Eng., 830 W. Broadway, Louisville 1, Ky.

▲ Bryant & Detwiler Co., 2304 Penobscot Bldg., Detroit, Mich. Contract Awarded. $5,000,000. 1 story, brick, steel ENGINEERING BLDG. B, DEARBORN, MICH. Ford Motor Co., 3000 Shaefer St., Dearborn, Mich. Bids Feb. 28. CD 2/8.

▲ Miller Davis Co., Kalamazoo, Mich. Contract Awarded. $2,000,000. 1 story process tungsten carbide PLANT, EDMORE, MICH. Carboloy Co., Inc., 11177 E. 8 Mile Rd., Detroit, Mich. Bids Apr. 11. CD 4/11.

In Great Bend, Kansas, this Butler Building is used as implement sales room and shop. Brick end and sidewalls, large display windows show how Butler Buildings can be adapted to needs of builder.



Sumner S. Sollitt & Co., engineer-contractors, Chicago, Illinois, use this Butler Building as construction company office. Butler Buildings make permanent yet portable job site shelters, field offices.

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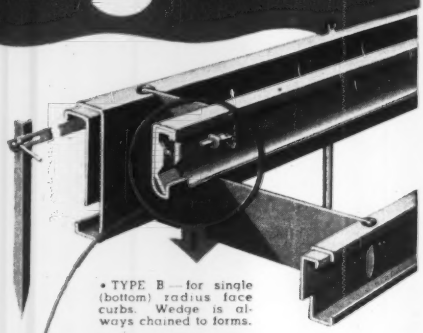
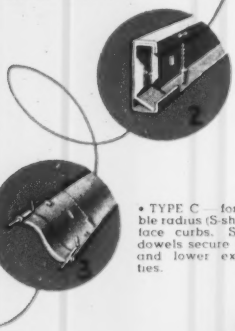
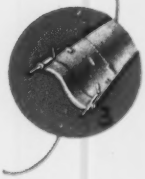
Heltzel steel forms augmented by various improvements through the years are the most rigid, advanced equipment obtainable. Your consideration of the many varied applications of these steel forms is respectfully invited. Write for Bulletin L-20.



• TYPE B — for single (bottom) radius face curbs. Wedge is always chained to forms.



• TYPE A — for straight face curbs (no radii). Slide lock is rigid, positive.



• TYPE C — for double radius (S-shaped) face curbs. Sliding dowels secure upper and lower extremities.

. . . and 3 Optional FACE CURB FORM SUPPORTS

HELTZEL
STEEL FORM & IRON CO.
WARREN, OHIO

Schurrer Constr. Co., Pontiac, Mich. Contract Awarded. $566,000. 2 story, bsmnt., brick, steel SCHOOL, LAPEER, MICH. City, City Council, Lapeer, Mich. CD 2/23, under LB.

▲ Crestview Homes, Inc., Scott Lake Rd., Pontiac, Mich. Owner Builds. $2,800,000. 275 brick, frame single HOUSES, Jeffrey Manor, Townsend Park, PONTIAC, MICH.

Barton-Malow, Co., 2631 Woodward St., Detroit, Mich. Contract Awarded. $500,000. 1 story, masonry WAREHOUSE, Proving Ground site, UTICA, MICH. Packard Motor Co., 1580 E. Grand Blvd., Detroit, Mich. CD 3/30.

WEST OF MISSISSIPPI

BIDS ASKED—BUILDINGS

Mo., Cape Girardeau—SCHOOL—B.A. 5/1—School Dist., Elizabeth Walther, secy., brick, concrete, steel, stone high school. $795,000. W. B. Ittner, Inc., 408 Bd. Educ., Bldg., 911 Locust St., St. Louis, Zone 1, archt. Fred E. Dormeyer Jr., Cape Girardeau, assoc. archt. CD 6/2/50.

Tex., Freeport—APARTMENT—Bids Asked—Howard Moore and Thomas A. Greacen, 1010 Winbern St., Houston, 15 four-unit apartment bldg. units. $450,000. Thomas A. Greacen, 1010 Winbern St., archt. CD 3/30.

Tex., Houston—PLANT—Bids Asked—Adolphus Rice Mills, 4600 Clinton Dr., construct of rice bran oil extraction plant. $350,000. CD 4/6.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† Johnson, Drake & Piper, Inc., 1138 Baker Bldg., Minneapolis, Minn. Low Bidder. $1,087,031. constr. Orwell Dam on Otter Tail River, MINNESOTA. U. S. Eng., 1217 U. S. P. O. and Custom House, St. Paul 1, Minn. Bids Apr. 10. CD 3/27.

▲ Berghuis Constr. Co., Clara City, Minn., Low Bidder. $80,547, grading 9 mi. between 1 mi. east of West Kandiyoki Co. line and Jct. T. H. 71, Kandiyohi Co. ***E. W. Coons, Inc., Hibbing, Minn., $722,187, paving, shoulder grading 12.7 mi. between Milaca and Ogilvie, Kanabec and Mille Lacs Counties; $266,182, grav. base, plant-mixed bit. surf. 24.6 mi. between 1 mi. south of Libby and Swan River, Aitkin and Itasca Counties; $31,425, plant-mixed bit. surf. stabilized grav. shoulders 11.26 mi. T. H. 2 between Swan River and Island, Aitkin and Itasca Counties***Duininck Bros. & Gilchrist, Olivia, Minn., $165,734, plant-mixed bit. surf. 16.5 mi. between Dilworth and 1 mi. west of Hawley, Clay Co.***J. V. Gleason, St. Louis Park, Minn., $168,034, plant mixed bit. surf. 26.7 mi. between 1.5 mi. east of Cass Lake and 1.6 mi. west of East Co. line, Cass Co.***Haugen & Mark, Fergus Falls, Minn. $123,668, grading 8.3 mi. between 10.4 mi. and 18.6 mi. east of Frazee, Becker Co.*** Herbison Constr. Co., Brainerd, Minn., $215,904, grav. base, plant-mixed bit. surf. 20.7 mi. between Browns Valley and Graceville, Big Stone and Traverse Counties***McLean-Astleford Co., 400 W. 78 St., Minneapolis 9, Minn., $995,082, grading, grav. base, road and plant-mixed bit. surf. and bridges 13.1 mi. between 59 Ave. east in Duluth and Knife River underpass, Lake and St. Louis Counties***Megarry Bros., St. Cloud, Minn., $162,956, grav. base, plant-mixed bit. surf. 10.7 mi. between Gilman and west jct. of T. H. 95, Benton Co., MINNESOTA. State Hy. Dpt., 1246 University Ave., St. Paul, Minn. Bids Apr. 6. CD 3/21.

† G. H. Lindekugel & Sons, Spencer, S. D. Low Bidder. $506,441. bank slope protection, Fort Randall Reservoir Project, near Chamberlain, Inv. 98. SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Apr. 3. CD 3/8.

LOW BIDDERS—BUILDINGS

▲ R. F. Ball Constr. Co., Box 13097, Houston, Tex. Low Bidder. $1,777,000. General constr., HIGH SCHOOL, SNYDER, TEX. Snyder Consolidated Independent School Dist., Snyder, Tex. Bids Apr. 12. Buford & Feinberg, 326 Interurban Bldg., Dallas, Tex. engrs. and archts. CD 4/10, under LB.

CONTRACTS—HEAVY CONSTRUCTION

† Orlando Constr. Co. & Louis Orlando, Coleman, Wis. Contract Awarded. $604,169, est. $624,618. 72 mi. Fort Randall-Winner 115-kv transmission line, Spec. DC-3318, Missouri River Basin Proj., Transmission Div., SOUTH DAKOTA. Bureau Reclamation, Dpt. Interior, Huron, S. D. Bids Mar. 13, awarded Apr. 2. CD 3/23, under LB.

▲† Westinghouse Electric Corp., 117 N. 13 St., Omaha, Neb. Contract Awarded. $1,137,020. Schedule A, $1,079,853, Schedule B***Moloney Electric Co., 5390 Bircher St., St. Louis, Mo., $1,214,275, Schedule C, for transformers for Garrison Dam, N. D., Fort Randall Dam, S. D. and Oahe Reservoir S. D., SOUTH DAKOTA and NORTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 21. CD 4/4, under LB.

† Jensen Constr. Co., 1501 Easton Blvd., Des Moines, Ia. Contract Awarded. $795,000. Sheet pile wall at Oahe Reservoir Proj. Inv. 113, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 27. CD 4/11.

▲† Al Johnson Constr. Co., 608 Foshay Tower, and Winston Bros., 1470 N. W. Bank Bldg., both Minneapolis, Minn. Contract Awarded. $7,952,362. Spillway Stage I, for Fort Randall Reservoir, near Pickstown, Inv. 85, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Mar. 23. CD 3/27, under LB.

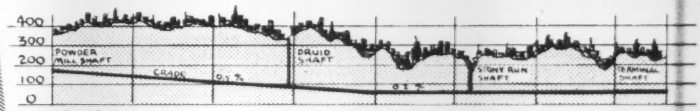
† George Bauman Constr. Co., Nevada, Mo. Contract Awarded. $881,110. rehabilitation 2 addnl. shell loading areas, one 1,000 area and other 1,100 area

(Continued on page 90)

CASE HISTORY OF A SUCCESSFUL TUNNEL JOB

FROM THE EIMCO FILE T190

BALTIMORE TUNNEL



SPECIFICATIONS

Length of this section of tunnel—7 miles.

Size heading—7′ (3 miles) 10′ (4 miles).

Headings worked—6 — Advance, average 2500′ per month, maximum 5000′ per month. 32 hole 9′ round drilled. 150 to 225 pounds of 40 or 60% powder (depending on rock) per round. Average about 7 pounds per cu. yd. of rock broken. Mucking time average 1 hour, 15 minutes. Mucking machines—Model 40 Eimcos.

The contractor responsible for driving high speed rock tunnels is required to be many things—a competent engineer, a geologist, a mechanic, an expert in labor relations and all of the other skills which the inevitible uncertainty of this work presents.

He must, therefore, be exacting and doubly cautious in his selection of machines. There can be no questions, no uncertainties about the machines doing their jobs, no matter how tough the going.

This is the reason you will find Eimco machines on the big majority of tunnel jobs the world over. There are no uncertainties when you have an Eimco loading out the round. It is fast, safe and low in cost regardless of conditions. You can't beat an Eimco for absolute dependability.

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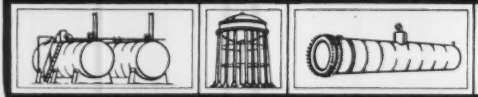

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with carrying frame
or dolly-mounted

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D. W. ONAN & SONS, INC.
5733 University Ave. S.E., Minneapolis, Minnesota

(Continued from page 88)

at Kansas Ordnance Plant, Inv. KCM 51-3, PARSONS, KAN. U. S. Eng., 601 Davidson Bldg., Kansas City, Mo. Bids Apr. 6.

† H. E. Beall, Box 291, Gatesville, Tex. Contract Awarded. $993,531. operations bldg. control tower, fire and crash station, Gray Air Force Base, Fort Hood, KILLEEN, TEX. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. Bids Mar. 30. Awarded Apr. 12. CD 4/9, under LB.

▲ † Winston Bros. Co., Monrovia, Calif. Contract Awarded, $2,240,359, constr. Flatiron Power and Pumping Plant and Afterby Dam, Estes Park-Foothills power aqueduct, Colorado—Big Thompson Proj., Spec. DC-3306, COLORADO. Bureau Reclamation, Dpt. Interior, Loveland, Colo. Bids Mar. 15, awarded Apr. 17. CD 3/27, under LB.

CONTRACTS—BUILDINGS

James Thompson & Sons, Ames, Ia. Contract Awarded, $677,000, SCIENCE bldg. addn., at Iowa State College, AMES, IA. State Bd. Educ., 1007 Des Moines St., Des Moines, Ia. Bids Feb. 8. CD 2/27, under LB.

▲ Basil Green, Lawrence, Kan., Contract Awarded, $1,875,000. general contract SCIENCE BLDG., at University of Kansas; Industrial Plumbing & Heating Co., 103 S. 4 St., St. Joseph, Mo., $387,739. heating and plumbing, at University of Kansas, LAWRENCE, KAN. State Bd. Regents, Topeka, Kan. Bids Mar. 10. CD 2/26.

▲ Kroh Bros., 800 Lee Blvd., Johnson Co., Kan., RFD from Kansas City, Mo. Owner Builds. $1,000,000. 90 DWELLINGS in Johnson Co., Kan., near Kansas City, Mo. RFD from that city, OLATHE, KAN.

▲ James M. Stanton Constr. Co., 5936 Lockton Lane, Johnson Co., Kan., RFD from Kansas City, Mo. Owner Builds. $1,500,000. 178 DWELLINGS in suburban area, Kansas, Johnson Co. and Mission Twp. area, OLATHE, KAN.

Dondlinger & Son Constr. Co., 1206 E. Lincoln St., Wichita, Kan. Contract Awarded. $774,351. General constr., James R. Mead SCHOOL, WICHITA, KAN. Bd. Educ., Wichita, Kan. CD 3/28, under L.B.

▲ Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex. Contract Awarded. Approx. $3,275,000, est. $3,000,000. Unit 1 Helicopter PLANT unit, FORT WORTH, TEX. Bell Aircraft Corp., Niagara Falls Blvd., Buffalo, N. Y. Awarded Apr. 13. CD 4/11.

▲ Dow Chemical Co., Freeport, Tex., Purchase and Hire, Approx. $2,750,000. rehabilitation Government-owned Magnesium PLANT***Tellepsen Constr. Co., 1710 Telephone Rd., Houston, Tex., Contract Awarded, Approx. $2,750,000, extens., addns. to Ethyl PLANT, tower type structures, brick, reinforced constr. FREEPORT, TEX. Giffels & Vallet, Commerce Bldg., Houston Tex., engrs. CD 6/15.

Norgaard & Shaw, 2933 N. Henderson St., Dallas, Tex. Contract Awarded, $749,885, est. $700,000. 1 story brick haydite block, Junior-Senior HIGH SCHOOL, rein.-con. fdn. and floor with asph. tile, etc., TEMPLE, TEX. Temple Independent School Dist., c/o Logan Ware, bus. mgr., Temple, Tex. Bids 3/13. CD 3/20, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

† Washington—B.A. 5/3—U. S. Eng., Pittock Block, Portland, Ore., sub-surface exploration for concrete aggregate North Dalles Terrace, Klickitat Co., CIVENG 35-026-51-243. D. S. Burns, Pittock Block, Portland, Ore., engr.

† Wash., Seattle—RANGE FACILITIES—B. A. 5/3—P. Wks. Officer, 13th Naval Distr., 1611 W. Wheeler St., repairs to Point Jefferson range facilities at degaussing station, Specs. 25431.

Calif., Oroville—B. A. 5/7—City, City Hall, sanitary sewage treatment plant enlargement, incl. (1) clarifier with mech. equipment (2) new sludge pump (3) modification of existing spetic tank (4) appurtenant piping and electrical work (5) misc. work and job clean up. R. H. Dewand, sanitary engr.

Calif., San Luis Obispo—B.A. 5/7—San Luis Obispo Co., Court House, rein.-con. cattlepass Huera and Hero Lopanza Proj.

Calif., San Rafael—B.A. 5/7—City, City Hall, remove bridge on K St., replace with rein.-con. arch culvert. Plans deposit $5.

Calif., Stockton—B.A. 5/7—City, City Hall street imprvs. to portions Map B of Pacific Gardens and its Tuxedo County Club Villas. $239,300. Plans deposit $5. H. M. Dunlap, City Hall, city engr. CD 10/4/46.

† Nev., Las Vegas—B. A. 5/7—U. S. Atomic Energy Comn., City Hall, Las Vegas, road and area paving, alternate test site near here. Plans deposit $25. CD 3/23.

Calif., Crescent City—EXHIBIT BLDG.—B. A. 5/8—State Div. Architecture, P. Wks. Bldg., Sacramento, general, mechanical, electrical work for exhibit bldg., 41st. Agricultural Assn.

† Calif., Livermore—B.A. 5/8—Veterans Admin., Vermont Ave. between H and I Sts. N. W., Wash., 25, D. C., sewage treatment plant for Veterans Administration Hospital, Proj. 12-4207.

▲ Calif., San Francisco—PASSENGER TERMINAL—B. A. 5/8—Public Utilities Comn., City Hall, 6 story, 241,560 sq. ft. passenger terminal, San Francisco Airport under Airport Contr. 130. Plans deposit $100. CD 1/9

(Continued on page 93)

170 pay yds. hourly on 600′ one-way hauls

for Contractor Stacy's

2 D TOURNAPULLS

Excavation for the Lost River Diversion Canal south of Klamath Falls, Oregon, involved 1,100,000 cubic yards of alkaline silt and hardpan. George R. Stacy of Tulelake, California, had the contract . . . and used 2 self-loading, rubber-tired D Roadster Tournapulls to handle most of the short-haul dirt. Here's the kind of Tournapull performance which helped finish the job well ahead of the schedule specified by the United States Bureau of Reclamation:

Working in light, easy-loading silt without a pusher, each Roadster loaded 5 pay yards in 1 minute. Total time for a typical 1200′ cycle — including load, haul, spread, and return — averaged 3 minutes. On the basis of 50-minute efficiency, that's 17 trips and approximately 85 pay yards per hour per unit.

Owner likes its "go-anywhere" ability

"Tournapull's ability to self-load this material and its ability to go through soft ground certainly surprised me," says Contractor George Stacy.

Self-loading light alkaline silt, 122 h.p. D Roadster picks up 5 pay yards in approximately 1 minute.

Operator likes its electrical controls

"Electrical controls make the D Roadster easy to operate and simple to service," adds operator Dave Logan. "This electrical system is a real advance for earthmoving machines."

In all, the 2 high-speed Roadsters handled approximately 385,000 yards. Their operating efficiency during this time was 95% for one unit and 100% for the other, according to contractor's records.

Drive to job at 20 m.p.h.

And here's another advantage recorded by Stacy. His D Tournapulls lost no time moving to this job, driving in over paved highways. They made the last 10-mile leg from Klamath Falls in 30 minutes.

You, too, will find this D Roadster a time-saver between jobs, and a money-maker on both small, one-man assignments and big-yardage fleet operation. Your LeTourneau Distributor is ready to show you more job-proved facts and figures. Why not call him, or write TODAY.

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(Continued from page 90)

Calif., San Francisco—POWER LINE—B.A. 5/8—Public Utilities Comm., City Hall, constr. Cherry Valley 22 KV power line.

Washington—B.A. 5/8—Clallam Co. Pub. Utility dist., Port Angeles, 1250-hp. propeller-type turbine, 1125-kva generator, 1 governor, 2 voltage, regulators, etc. for Hoh River Oxbor hydroelectric project, Forks. Plans deposit 420. Stevens & Koon, Spalding Bldg., Portland, Ore., engrs. CD 6/29.

† **Wash., White Bluffs**—FACILITIES—B. A. 5/8—Dpt. Army, Purchasing & Contg. Office, Fort Lewis, rehabilitating electrical, water and sewer facilities at military installation, Inv. No. 51-161.

BIDS ASKED—BUILDINGS

Calif., San Francisco—CLASSROOM—B.A. 5/8—State Div. Architecture, Pub. Wks. Bldg., Sacramento, 38,000 sq. ft., 2 story, rein.-con. classroom building at San Francisco State College. Plans deposit $25. CD 2/21/46.

Calif., Bellflower—SCHOOL—B. A. 5/9—Bellflower School Dist., 6145 N. Clark Ave., Woodruff, Roosevelt and Jefferson School addns., Approx. $30,000 Kistner, Curtis & Wright, 816 W. 5 St., Los Angeles, archts. CD 10/19/49.

Calif., Hillsborough and Burlingame—HOSPITAL—B.A. 5/9—San Peninsula Hospital Dist., 217 W. Santamez St., Hillsborough, 5 story hospital. Plans deposit $100. W. Adrian, 417 Market St., San Francisco, engr. Douglas D. Stone & Louis B. Mulloy 619 California St., San Francisco, archts. CD 1/10/44.

SOON LETS CONTRACTS—BUILDINGS

Ore., Portland—STORE—B. A. 5/1—J. J. Newberry Co., Failing Bldg., soon lets contract, remodel, enlarge store, 5 and Alder Sts., incl. construct quarter block 5 story bldg. $700,000. Glen Stanton, Concord Bldg., archt. CD 1/11.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **English Electric Co. Ltd.**, Stafford, England, Low Bidder, $2,229,186, design, mfg. and installation three 15,800 kva generators for Albeni Falls Power Plant, Inc. No. CIVENG 51-43, IDAHO. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids Apr. 12. CD 3/12.

Westinghouse Electric Corp., East Pittsburgh, Pa., Low Bidder, $518,711, 13 compressed air circuit breakers of 1,500,000 kva. interrupting capacity for Rock Island Dam, WENATCHEE, WASH. Chelan County Pub. Utility Dist. 1, c/o Stone & Webster Eng. Corp., engr., 49 Federal St., Boston, Mass. Bids Mar. 26. CD 3/13.

▲ **Porter W. Yett**, 6500 N.E. Ainsworth St., Portland, Ore. Low Bidder. $1,286,424, grading, paving 6.5 mi., constr. 2 bridges, Bunker-Hill-Delmar Sect., Oregon Coast Hy., Coos Co.***Warren Northwest**, 9860 N.E. Hancock St., Portland, Ore., $173,030, pavement, resurf. 10.7 mi. Alder Creek-Philomath Sect., Alsea Hy. FAP S-229 (3), Benton Co., OREGON. State Hy. Comm., State Office Bldg., Salem, Ore. Bids Apr. 12.

▲ **General Construction Co.**, Box 3244, Portland, Ore. Low Bidder. $1,074,350. 6.96 mi. hydraulic placed embankment, Columbia River Hy., FAP FI-174 (11) and FI 35 (4), Hood River and Wasco Counties, OREGON. State Hy. Comm., State Office Bldg., Salem, Ore. Bids Apr. 12. R. H. Baldock, c/o owner, state engr.

Frederickson & Watson Constr. Co., 873 81 Ave., Oakland, Calif. Low Bidder. $513,377, c. conc. 5.2 mi. between Chualar and Spence Underpass, Monterey Co., CALIFORNIA. State Div. Hys., P. Wks. Bldg., Sacramento, Calif. Bids Mar. 28. CD 3/6.

T. E. Connolly, Inc., Sheldon Bldg., San Francisco, Calif., Low Bidder. $636,205, constr. 5.8 mi. access road between Jones Point and Cherry River Bridge, Stanislaus National Forest, SAN FRANCISCO, CALIF. Public Utilities Comm., City Hall, San Francisco, Calif. Bids Apr. 3. CD 3/1.

▲ **Dan Caputo & Edward Keeble**, 2711 Moorpark St., San Jose, Calif. Low Bidder, $1,030,130, impry. 12 St. dam and adjacent streets, incl. excav. paving, etc. OAKLAND, CALIF. City, City Hall, Oakland, Calif. Bids Apr. 3. CD 3/26.

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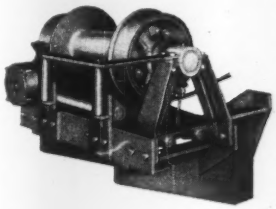

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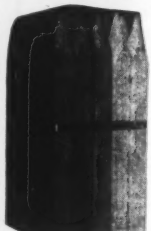

	Per 100	In 1000 Lots Per 100
2x2—12"	$ 7.15	$ 6.50
—15"	8.80	8.00
—18"	9.60	8.70
—24"	11.50	10.45
—36"	16.50	15.05

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—15"	5.75	5.20
—18"	5.80	5.25
—24"	6.90	6.25
—36"	9.70	8.80

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LOW BIDDERS—BUILDINGS

† **Westinghouse Electric Corp.**, Herdlyn, Calif., Low Bidder. $550,011, SUB-STATIONS for emergency power supply, Central Valley Proj., Calif., Colorado-Big Thompson Proj., Colo., and Missouri River Basin Projs., Spec. DS-3291, CALIFORNIA, COLORADO and WYOMING. Bureau Reclamation, Dpt. Interior, Bldg. L-A, Denver Federal Center, Denver, Colo. Bids Apr. 5.

CONTRACTS—HEAVY CONSTRUCTION

▲ **C. R. O'Neil, Creswell, Ore.** Contract Awarded. $117,101, grading, surf. 2.41 mi. Alsea-Deadwood Hy., Benton Co.***Rogers Constr. Co., Babler Bros., 4617 S.E. Milwaukee St., Portland, Ore., $457,409; grading, paving Tumalo-Bend sect., McKenzie-Bend Hy., Deschutes Co.***J. C. Compton, Box 86, McMinnville, Ore., $452,454, wid'n, paving, 19.64 mi. Crater Lake and West Diamond Lake Hys., FAP S-47 (5) and S-112 (1), Jackson and Douglas Counties, OREGON. State Hy. Comn., State Office Bldg., Salem, Ore. Bids Apr. 13. Grand total $1,026,964.

▲† **Peter Kiewit Sons' Co.**, 345 Kieways Ave., Arcadia, Calif. Contract Awarded. $1,357,778, est. $1,000,000 Rio Hondo Channel Imprvt., Downey, Los Angeles Co.; CIVENG 04-353-51-23, CALIFORNIA. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Mar. 27, awarded Apr. 9. CD 3/30, under LB.

† **Clyde W. Wood & Son, Inc.**, P. O. Box 620, North Hollywood, Calif., Contract Awarded. $723,513, est. $733,936. constr. Lauro Dam earthfill structure, near Santa Barbara, Spec. DC-3329, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Goleta, Calif. Bids Mar. 15, awarded Apr. 5. CD 3/21, under LB.

Hensler Constr. Co., 7550 Wheatland Ave., Los Angeles, Calif. Contract Awarded, $554,931, runways and taxiways at Los Angeles International Airport, LOS ANGELES, CALIF. Dpt. Airport, 5800 Avion Dr., Los Angeles, Calif. Bids Apr. 3. CD 3/22.

† **Clyde W. Woods & Son**, Box 620, North Hollywood, Calif., Contract Awarded, $602,475, enlargement runways at SAN NICHOLAS ISLAND, CALIF. Dpt. Navy, Point Mugu, Calif.

CONTRACTS—BUILDINGS

Stone & Webster Eng. Corp., 49 Federal St., Boston, Mass., Contract Awarded. $500,000. 100x400 ft., steel, masonry STOREROOM and GARAGE on piling fdn., RENTON, WASH. Puget Sound Power & Light Co., Stuart Bldg., Seattle 1, Wash.

Taylor & Kritz, Box 16, **Arlington**, Calif., Contract Awarded, $561,143, est. $400,000. Herbert Hoover SCHOOL, INDIO, CALIF. Indio School Dist., Indio, Calif. Bids Feb. 19. CD 2/28, under LB.

▲ **W. C. Smith, Inc.**, 2119 Pacific Ave., Long Beach, Calif., Contract Awarded. $1,258,512, physical EDUCATION bldg. at Polytechnic High School, LONG BEACH, CALIF. Bd. Educ., 715 Locust Ave., Long Beach, Calif. Bids Apr. 5, awarded Apr. 9. CD 4/12, under LB.

LeSage Development Co., 424 S. Beverly Dr., Beverly Hills, Calif. Owner Builds. $500,000. 52 frame DWELLINGS, Sherman Way, LOS ANGELES, CALIF. CD 12/29.

L. E. Dixon, 409 S. California St., San Gabriel, Calif. Contract Awarded. Approx. $500,000, est. $395,000. 3 story, rein.-con. OFFICE, LOS ANGELES, CALIF. Associated Veterans Aircraft & Automotive Insurance Co., 2506 W. 6 St., Los Angeles, Calif. Bids Mar. 6, awarded Apr. 4. CD 2/19.

Moss Constr. Co., 227 S. Robertson St., Beverly Hills, Calif., Owner Builds. $525,000. 74 frame, stucco DWELLINGS in Tract 16894, NORWALK, CALIF. CD 12/29.

Cecil Constr. Co., 13317 Studebaker Rd., Norwalk, Calif. Contract Awarded. $603,500, 73st stucco DWELLINGS, Behrens, Flatbush Aves. and Foster Rd., NORWALK, CALIF. Norwalk Residential Homes, 13317 Studebaker Rd., Norwalk, Calif.

J. A. McNeil Co., 714 W. Olympic St., Los Angeles, Calif., Contract Awarded. Approx. $500,000, storage and maintenance hangars at Palmdale Airport, PALMDALE, CALIF. Lockheed Aircraft Corp., 2555 Hollywood Way, Palmdale, Calif. CD 1/26.

Hadley-Cherry, 8754 Beverly Blvd., Los Angeles, Calif. Contract Awarded, $570,000, 76 frame DWELLINGS in Tract 1470, SANTA ANA, CALIF. Raymar Development Co., 6125 Flower St., Los Angeles, Calif. Rolan Logan, Russell, Pasadena, Calif., archt.

H. J. Farrington, 9207 S. Lakewood St., Rivera, Calif., Contract Awarded, $518,830, 1 story frame, stucco Ocean View SCHOOL, WHITTIER, CALIF. East Whittier Elementary School Dist., 14421 E. Whittier Blvd., Whittier, Calif. Bids Mar. 26, awarded Apr. 10. CD 4/3, under LB.

ALASKA

BIDS ASKED—BUILDINGS

† **Alaska**—FAMILY QUARTERS—B.A. 5/3—U. S. Eng., Flamingo Room, New Washington Hotel, Seattle, Wash., constructing Alaska Communications system facilities or installations, incl. from 2 to 6 family quarters (depending on location) security fence, repeater bldg.; power house, combination garage and warehouse, incl. grading, roads, septic tanks, leaching wells, and all other required utilities, at each of the following locations, Harding Lake, Big Delta, Johnson River, Tok Junction, Northway, Glennallen, Sheep Mountain, Inv. No. S 95-507-51-57. Plans deposit $100. CD 8/29/50.

† **Alaska, Eklutna**—WAREHOUSE—B.A. 5/1—Bureau Reclamation, Dpt. Interior, Palmer, Alaska, erecting warehouse at Eklutna Govt. Camp, Eklutna Proj., Spec. NO. DC-3295. Bids 2/27 rejected. CD 1/19.

(Continued on page 97)

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90 TO 130 BARRELS PER LOAD

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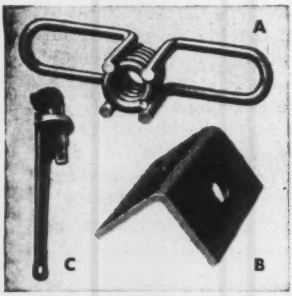

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C-SPECIAL COIL ROD WRENCH
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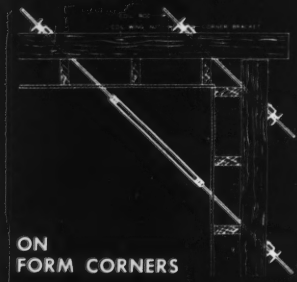
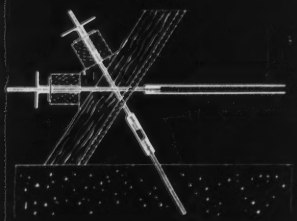


ON FORM CORNERS



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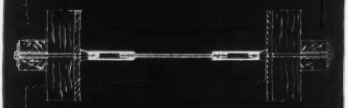

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(Continued from page 94)

† **Alaska, Fort Richardson**—TELEPHONE EXCHANGE—B.A. 5/4—U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, 1 story, 85x111 ft. rein.-con. or masonry telephone exchange, Inv. No. S95-507-51-58. $320,000. Plans deposit $50. Jones & Bindon, Hoge Bldg., Seattle 4, Wash., archts. CD 3/14.

LOW BIDDERS—BUILDINGS

† **J. H. Pomeroy & Co., Inc.**, 333 Montgomery St., San Francisco, Calif. Low Bidder, $959,000, est. $889,184, post engineer facilities, and PAINT and DOPE STORAGE bldg., Inv. 51-50 FORT RICHARDSON, ALASKA. U. S. Eng., New Washington Hotel, Seattle 1, Wash. Bids Apr. 12. CD 3/19.

CANADA

BIDS ASKED—BUILDINGS

Que., Montreal—SCHOOL—B.A. 5/1—M. Jarry, 117 W. Ste. Catherine St. 3 story, 64x145 ft., 1 story, 54x85 ft., rein.-con., brick, SCHOOL for Parish of Ste. Emelie on Christopher-Columbia St. $350,000. A. E. Doucet, 2245 W. Sherbrooke St., archt. CD 12/6.

Man., Winnipeg—LIBRARY—B.A. 5/4—University of Manitoba, Winnipeg, 2 story, brick, steel main library $800,000. Green, Blankenstein & Russell, Time Bldg., archts. CD 4/24/50.

Que., Drummondville—CHURCH, etc.—B.A. 5/7—Rev. G. Desilets, cure, Parish of S. S. Pierre & Paul, Drummondville, 2 story, 47x81 ft., steel, block, brick church and presbytery. Approx. $300,000. D. Deshaies, 737 Buchanan Ave., Ville St. Laurent, Montreal, archt. CD 9/24/45.

CONTRACTS—HEAVY CONSTRUCTION

S. McNally & Sons Ltd., Rosseau Rd., Hamilton, Ont. Contract Awarded, $348,000, steel water mains, appurtenances HAMILTON, ONT. City, City Hall, Hamilton, Ont. Bids Mar. 8. Former contractor did not produce bond. CD 3/22, under LB.

▲ **D. Lamothe Constr. Co.**, Noranda, Que. Contract Awarded. $1,000,000, rebuilding Gatineau Hy., 20 mi. from a mile below Brennan's Hill to Kazabazua and paving 11 mi. stretch from Wakefield Village to Low Township line, Wakefield, QUEBEC. Dpt. Hys., Quebec City, Que. (Prov. Govt.)

CONTRACTS—BUILDINGS

Fluor Corp., Ltd., 4204 MacLeod Trail, Calgary, Alta. Contract Awarded. Approx. $500,000, PLANT, JUMPING POUND. (Postal Dist. CALGARY) ALTA. Shell Oil Co. of Canada Ltd., 25 E. Adelaide St., Toronto, Ont. CD 4/12.

▲ **Maritime Steel & Foundries Ltd.**, New Glasgow, N. S. Contract Awarded $1,500,000 COAL WASHING PLANT, SYDNEY, N. S. Dominion Coal Co., Ltd., Sydney, N. S. Awarded Apr. 12. CD 1/23.

P. H. Braendel, 368 40 Ave., Lachine, Que. Contract Awarded. Approx. $775,000. 80 dwellings, 54 Ave., LACHINE, QUE. Stoney Point Housing Ltd., 350 39 Ave., Lachine, Que.

LATIN AMERICA

BIDS ASKED—HEAVY CONSTRUCTION

† **Bermuda**—U. S. Eng., 80 Lafayette St., New York 13, N. Y., U.S.A., receiving bids on or about June 15, Long Bird-Hamilton Island Causeway Bridge at Kindley Air Force Base, ENG 30-075-51-629. $700,000. Plans deposit $10.

PROPOSED PROJECTS

WATER SUPPLY

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 hall of Records, plans by H. C. Light, 7551 Melrose Ave., 100,000 underground water storage tank and rein.-con. storage vault, East Los Angeles. $110,000.

Calif., Redwood City—City, City Hall, $500,000 bond election May 8, water sys. CD-1/25.

Colo., La Junta—City, increasing pumping capacity for town's water sys. $315,000.

Ky., Springfield—Springfield Water Bd., reservoir with lines, imprv. pumping plant. $250,000. Howard K. Bell, 533 S. Limestone St., Lexington, consult. engr.

▲ **La., Abbeville**—City, bond election May 28, WW imprvs. $1,275,000.

N. M., Ruidoso—Town, Town Hall, WW sys. imprvs. $200,000. Wilson & Co., 1542 Colorado Blvd., Denver, Colo., and 219 W. Gold Ave., Albuquerque, consult. engrs. CD 8/8/9.

O., North Baltimore—City, Bd. P. Affairs, WW imprvs., incl. 2 new wells, hydrants, new mains in north section, $120,000. Jones, Henry & Schoonmaker, Security Bldg., Toledo, consult. engrs.

Okla., Bartlesville—City, voted bonds, WW imprvs. $325,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 3/2.

Okla., Ponca City—City, defeated bonds, water softener, $100,000. Fred G. Fellows, Ponca City, consult. engr. CD 3/28.

Ore., Reedsport—City, City Hall, voted $250,000 bonds, reservoir and relaying water mains, John W. Cunningham, Spalding Bldg., Portland, Ore., consult. engr.

Tex., Freeport—City, voted bonds, Proj. 2, water supply well, $40,000; Proj. 4, water mains, $70,000. CD 3/27.

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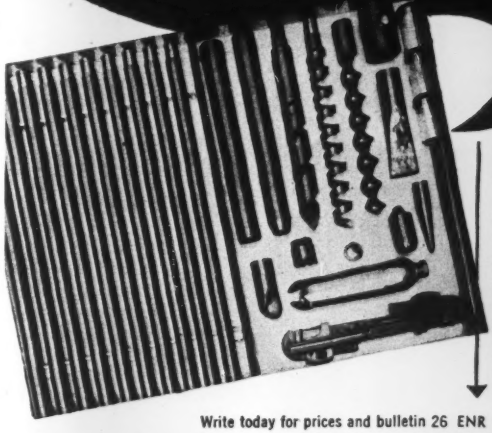

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Tex., Garland-Missouri-Kansas-Texas Lines, K. H. Hanger, ch. engr., Katy Bldg., Dallas, Zone 2, water lines, facilities, near here. $150,000.

Tex., Houston—Harris County Water Control & Imprvt. Dist. 22, Court House, WW exten., imprvs., rehabilitation, except supply. $375,000; water supply, wells, $75,000, Sunnyside Community. Garrett Eng. Co., 5008 Almeda Rd., consult. engr. CD 4/5.

▲ Alta., Calgary—Municipality, WW addns. $5,500,000. J. I. Strong, City Hall, city engr. CD 10/28/43.

▲ Ont., Cornwall—City, filtration plant and modernize city's WW sys. $1,500,000.

SEWERS, WASTE DISPOSAL

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., 501 Hall of Records, sanitary sewers in Sorenson Lane, Los Nietos, $61,848; sanitary sewers Casitas Ave., Altadena, $186,800.

Calif., Redwood City—City, City Hall, $300,000 bond election May 8, sewerage sys. CD 1/26.

▲ Colo., Denver—City and Denver Co., City and County Bldg., Denver, Colo., storm sewers, appurtenances in and for a district known as Northeast Storm Sewer District, $1,117,288. Terry Owens, city engr.

Kan., Clay Center—City, defeated $195,000 bond Apr. 3, sewage disposal plant. CD 3/15.

Ky., Hopkinsville—City, sewage treatment plant imprvs., $150,000, Howard K. Bell, 555 S. Lime St., Lexington, consult. engr. CD 11/12/46.

Mo., Hannibal—City, W. C. Fisher, clk., 2 sewers to serve various areas, $240,000, Black & Veatch, 4706 Broadway, Kansas City, Mo., consult. engrs. CD 4/3.

Mo., Trenton—City, defeated $400,000 bonds, sewage disposal plant. CD 3/29.

Neb., Fremont—City, voted bonds, sewer constr. $150,000. CD 3/22.

▲ Neb., Omaha—City, City Hall, 18 and Farnam Sts., sanitary sewer extens., storm sewers, sewer outlet in the Minne Lusa Dist. $3,500,000. E. W. Woodbridge, city engr.

† N. M., Albuquerque—U. S. Eng., P. O. Box 1538, Albuquerque, storm sewers, drainage, area earthwork, $70,000 and sanitary sewers, $75,000, Serial No. Eng. 29-005-51-31.

N. Y., Hamburg—Village, sewage treatment plant repairs, addn. $200,000.

N. C., Marion—Town, voted bonds Apr. 3, sewage disposal plant, $400,000. CD 12/1.

▲ O., Shelby—City, sewage disposal plant, $1,000,000, Floyd Browne, 413 E. Church St., Marion, consult. engr. CD 11/12/47.

Okla., Bartlesville—City, voted bonds; sewage disposal plant, $500,000. Black & Veatch, 4706 Broadway, Kansas City, Mo. consult. engrs. CD 3/21.

Okla., Ponca City—City, voted bonds, storm sewer extens. $224,000; sanitary sewer extens., $56,000. Fred G. Fellows, Ponca City, consult. engr. CD 3/28.

Ore., Corvallis—City, City Hall, constr. 4,500 ft. interceptor sewers and treatment plant, $800,000. Cornell, Howland, Hayes & Merryfield, Corvallis, consult. engrs. CD 2/8/45.

Pa., Emporium—Emporium Boro, Boro Bldg., sewage disposal plant, $250,000. Chester Engineers, 210 E. Park Way, N.S., Pittsburgh, engrs. A. T. Andrews, c/o owner, engr. CD 1/7/45.

Tex., Freeport—City, voted bonds, Proj. 1, sewage disposal plant, $65,000; Proj. 3, sanitary sewer lines, $75,000. CD 3/27.

Tex., Houston—Afton Oaks Subdivision, 2517 University St., plans by J. B. Dannenbaum, 3940 Main St., storm sewers, $60,000; sanitary sewers, $65,000.

Tex., Houston—Wm. G. Farrington Co., 1719 Sunset St., storm sewers, earthwork, $60,000; sanitary sewers, $65,000, in an additional extension of Tanglewood subdivision.

(Continued on page 101)

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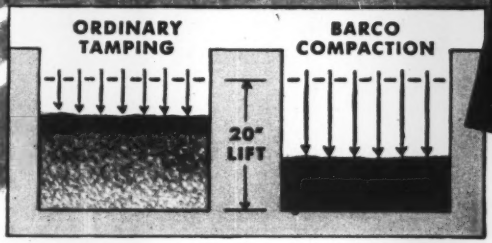

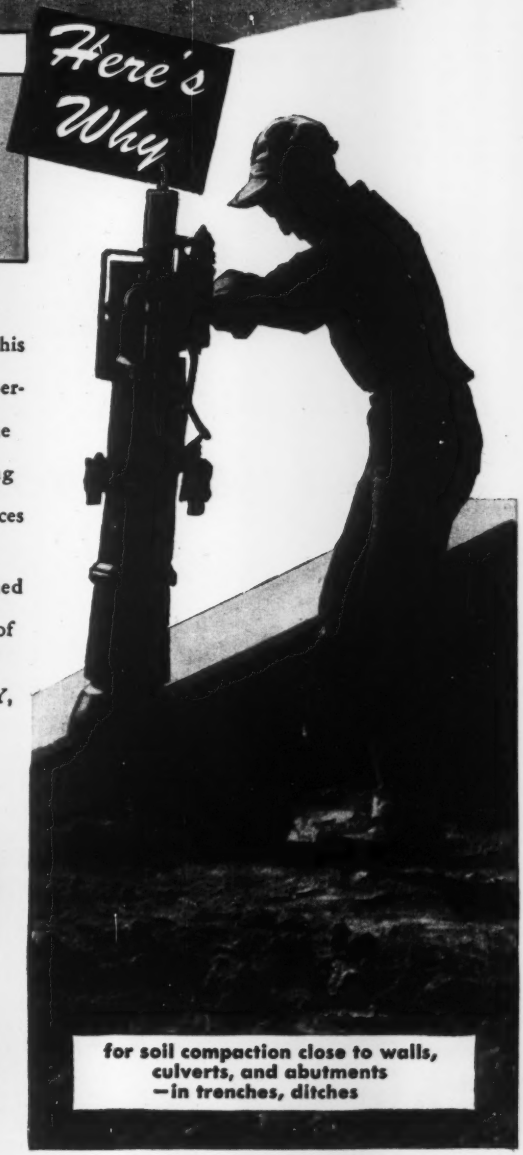

for soil compaction close to walls, culverts, and abutments —in trenches, ditches

ONLY the BARCO RAMMER can produce specified compaction on lifts up to 20 inches*. This is due to the "one-two punch" of the Rammer. The Rammer jumps about 14 inches in normal operation. It drops with the weight of about 200 lbs. Immediately after the impact, the operator trips the handle causing the Rammer to jump into the air again. This gives a follow-through, or thrusting effect, to the original impact. This double impact differs from the "quick pat" of other tamping devices which tend to produce compaction only on the surface of the fill.

The Barco Rammer is a completely self-contained unit; no auxiliary or extra equipment is required. With a Barco Rammer one man can do the work of five! Ask for the nearest Barco Distributor to give you a demonstration. *Catalog and information on request.* BARCO MANUFACTURING COMPANY, 1814 E Winnemac Ave., Chicago 40, Illinois. In Canada: The Holden Co., Ltd., Montreal.

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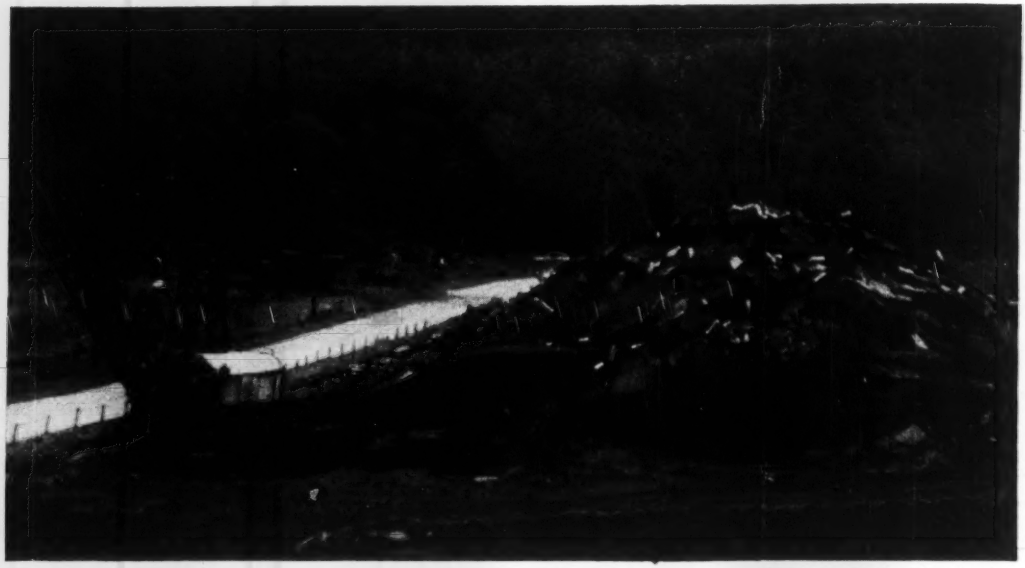

ROCKMASTER *blast by Fauzio Brothers at Lehigh Navigation Coal Company's Nesquehoning, Pa., stripping operation.*

No rock pile this . . . but the high point of a blast!

THE machine-gun camera reels off twelve photos—one every 1/3 second—to "freeze" at its peak this typical ROCKMASTER "16" blast—three seconds after initiation of the shot. Here you see no wasted explosives gas, no wild rock—proof that ROCKMASTER "16" blasting can mean true *controlled force . . . controlled throw . . . controlled breakage!*

ROCKMASTER "16" may be the answer to *your* problems whether your job calls for blasting coal, rock, ore. The free ROCKMASTER "16" booklet shows how you can profit through the use of the correct numbers of the *sixteen* ROCKMASTER milli-second delay electric blasting caps teamed with the ROCKMASTER system of explosives choice and loading methods. Write for your copy. Our technicians will be glad to assist you in applying ROCKMASTER "16" to your operations.

Less Bark *More Bite*

ROCKMASTER "16" TIMINGS

Rockmaster No.	Avg. Time of Each Delay from Zero (milli-seconds)
0 (zero)	0 (inst.)
1	8
2	25
3	50
4	75
5	100
6	125
7	150
8	175
9	200
10	250
11	300
12	350
13	400
14	450
15	500
16	550

Rockmaster: Reg. U. S. Pat. Off.

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(Continued from page 98)

Tex., **Houston**—Harris County Water Control & Imprvt. Dist. 22, Court House, storm sewer, $100,000; sanitary sewerage sys. exten., imprvs., rehabilitation, $325,000. Garrett Engr. Co., 5008 Almeda Rd., consult. engr. CD 4/5.

Tex., **Pasadena**—Joe H. Vickers, 1507 Delano St., Houston, sanitary sewers, $80,000; storm sewers, $65,500, 100 acre tract outside city limits.

Wis., **South Milwaukee**—City, voted $500,000 bonds, sewers, imprv. sewage treatment plant. CD 2/8/45.

BRIDGES

Connecticut—State Hy. Dpt., Hartford,

Windsor—bridge, approaches 0.2 mi. Farmington River at Poquonock.

▲ Mich., **Detroit**—City, Carl D. Warner, comr., P. Wks., rein.-con. grade crossing separation, Mt. Elliott and Lynch Rd. $2,000,000. George R. Thompson, City Hall, city engr., Glenn C. Richard, Detroit, DPW engr. CD 3/30/43.

Pennsylvania—State Hy. Dpt., Harrisburg,

Armstrong Co.—ramp over tracks of Pennsylvania R. R. in West Leechburg, $250,000. E. L. Schmidt, c/o owner, ch. engr.

STREETS AND ROADS

Colo., **Denver**—City and Denver Co., City and County Bldg., Denver, Street Paving Dist. 171 concrete curb, gutter, sidewalk, gravel base course asph. paving, etc. $116,000. Terry Ownes, City Hall, city engr.

▲ Connecticut—State Hy. Dpt., Hartford,

Branford and Guilford, drainage, resurf. 1.1 mi. U. S. 1 from Moose Hill Rd. westerly, $75,000.

East Hartford and Glastonbury—grading, paving 4 mi. Expressway Conn. 2, from Ensign St., East Hartford to Conn. 2, Glastonbury, $400,000.

Glastonbury—grading, paving approx. 1.6 mi. Expressway from Conn. 2 southerly to Conn. 17, $120,000.

Hamden Co.—b. conc. 2.3 mi. road Dixwell Ave. two sections in Hamden, $100,000.

Litchfield and Torrington—resurf. 4.9 mi. Litchfield Center to Torrington City line, $350,000.

Middletown—b. conc. 4 mi. expressway—Conn. 9 Green St. to Main St. exten., $300,000.

Simsbury and Avon—resurf. 2.3 mi. Simsbury-Canton town line to Conn. 10, $85,000.

Vernon—grading 4 mi., for addnl. traffic lane from Conn. 83 to Mile Hill Rd. incl. bridge over N. Y., N. Y. and H. R. R., $700,000.

Windsor—resurf. 2.9 mi. U. S. 5 various sections from Keney Park to Windsor Green, $209,000.

▲ Florida—State Rd. Dpt., Tallahassee,

Collier Co.—widn., rebuilding drainage structures, constr. new pavement 8.907 mi. Road 45, between Maples and Lee Co. line, $600,000.

Lee Co.—wid'n., new pavement 2.914 mi. Road 80 from A.C.L. R.R. east of Ft. Myers to Tice, $300,000.

Polk Co.—relocation of Road 540, at Eloise, $140,000.

Taylor Co.—pavement 7.238 mi. Road 14 between Eridu and Road 55, $70,000. S. P. Turnbull, state hy. engr.

Ind., **Indianapolis**—City, City Hall, street resurf. and sewer project, incl. repaving Emerson Ave. from Brookville Rd. to Lexington Ave., $61,000; resurf. Senate Ave. from Indiana Ave. to 16 St., $139,865; asph. side lanes and C. conc. in center, Catherwood Ave. exten. between Ivanhoe St. and Oak Ave., Oak Ave. exten. from Catherwood to Sheridan Ave. and paving Sheridan from Ivanhoe to Pennsylvania R.R. crossing, $24,000.

Mich., **Adrian**—City, defeated $750,000 bonds Apr. 2, 25 mi. city streets imprvs. CD 3/8.

Mich., **Detroit**—City, Carl D. Warner, comr. P. Wks., wid'n. Randolph St., Monroe Ave. to Cadillac Square, and Davison Ave. from Livernois St. to Wyoming Ave. $400,000. CD 12/21/44.

▲ Mich., **Detroit**—Bd. Suprvs., Wayne Co. repair county roads, incl. parts of Greenfield, Seven Mile Rd., Joy,

Builders Visible Flow Chlorinizers are designed to *simplify* plant operation — not to complicate it. Any competent mechanic with a knowledge of the proper methods of handling chlorine can easily master the operation and maintenance of Builders Chlorinizers. Specially trained personnel are not required to operate or service these chlorine gas feeders. The utmost safety and dependability are assured when Builders Chlorinizers handle your chlorination jobs. For Bulletins and complete information, address Builders-Providence, Inc. (Division of Builders Iron Foundry), 390 Harris Ave., Providence 1, R. I.

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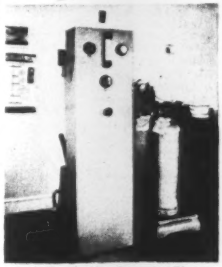
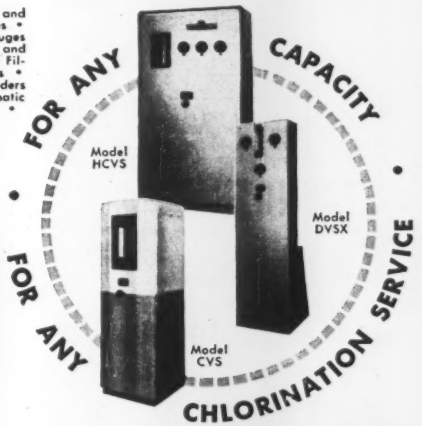


Installation in Sewage Plant, Medina, Pa.



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Fort, and Southfield Sts. $5,000,000. Leroy C. Smith, Cadillac Tower, county rd. engr. CD 9/7/44.

▲ **Neb., Omaha**—City, City Hall, 18 and Farnam Sts., $3,500,000 bond election Apr. 17, construct city arterial highway. E. W. Woodbridge, city engr.

Tex., Houston—Alton Oaks Subdivision, 2517 University St., asph. type street paving, 35 ft. width, esplanades, etc. $125,000. J. B. Dannenbaum, 3940 Main St., consult. engr.

Tex., Seminole—City, street imprv. and paving program, $100,000. Joe E. Ward, Nacol Bldg., Wichita Falls, Tex., consult. engr. CD 2/19.

† **Va., Quantico**—Pub. Wks. Office, Capt. C. W. Porter, officer, Potomac River Naval Command, Naval Gun Factory, Wash. D. C., repairing roads, Marine Corps School, Guadalcanal Area, clear brush, drainage, culverts and pavement. $450,000. Whitman, Requardt & Assoc., 1304 St. Paul St., Baltimore 2, Md., engrs.

Wash., Wenatchee—Chelan Co., Court House, grading 1.8 mi. Wenatchee Heights, $85,000; 2 mi. at Chelan, $60,000. D. W. West, co. engr. CD 2/24/44.

EARTHWORK, WATERWAYS

Mich., Detroit—City, Carl D. Warner, com. P. Wks., 1st section bulkhead exten. from Randolph to 12 Sts., straightening river frontage. $700,000. George R. Thompson, City Hall, city engr. CD 7/19/44.

AIRPORTS

▲† **Mass., Chicopee**—AIRPORT IMPRVS—Air Force Dpt., Westover Air Force Base, constr. operations bldg., hangar, new barracks and other facilities. $2,000,000.

Tex., Cuero—AIRPORT—City, airport. $100,000.

LATIN AMERICA

Mexico, Mexico City—Remolques Eumex, S.A. Calzada de San Antonio Abad, 130, Mexico City, plans passenger-freight trailer factory. $500,000.

PUBLIC BUILDINGS

▲ **Calif., Fresno**—DORMITORIES, etc.—State Div. Architecture, P. Wks. Bldg., Sacramento, 2 dormitories $1,007,805; agricultural bldg., $755,000; natural science bldg., $744,000; science bldg. addn., $164,000, all at Fresno State College. CD 2/28/45.

▲ **Calif., Sacramento**—PRINTING PLANT—State Div. Architecture, P. Wks. Bldg., Sacramento, plans by Wurster, Bernardi & Emmons, 402 Jackson St., San Francisco, and Albert W. Kahl, 42 2 Ave., San Mateo, state printing plant, Approx. $2,780,000.

▲ **Calif., Sacramento**—SCHOOLS—Sacramento City Unified School Dist., 1200 21 St., $6,500,000 bond election May 10, addnl. school construction. CD 5/15/47.

Calif., San Jose—MUSIC—State Div. Architecture, P. Wks. Bldg., Sacramento, music bldg. at San Jose State College. $760,000. CD 4/26/43.

▲ **Idaho, Blackfoot**—SCHOOLS—School Bd., Blackfoot voted $685,000 bonds, high school, $1,000,000; 3 elementary school addns., $300,000, Paradice & Hunter, Deitrich Bldg., Pocatello, archts. CD 3/13.

Idaho, Rupert—SCHOOL—School Bd., Rupert, defeated bonds, school, $790,000. CD 3/22.

Ill., Harvard—SCHOOLS—Harvard Scool Dist. 50, Floyd E. King, supt. Schools, N. Jefferson St., defeated $850,000 bonds, high and grade schools. CD 3/12.

Ill., Roxana—SCHOOL—Roxana Community School Dist., S. W. Fry, supt., Roxana, Ill., plans by Wm. B. Ittner, Inc., 408 Bd. Educ. Bldg., 911 Locust St., St. Louis, 1, Mo., 2 story, 1,200,000 cu. ft., architectural cement high school addn. CD 4/6.

▲† **Ia., Council Bluffs**—POST OFFICE, etc.—General Services Admin., General Service Bldg., 48 and F Sts. N. W., Wash., 25, D. C., post office and federal bldg., $2,500,000.

▲ **Kan., Wichita**—SCHOOL—Bd. Educ., voted $5,276,000 bonds Apr. 3, schools. CD 3/14.

Kan., Winfield—SCHOOL—School Bd., voted $195,000 bonds, trade school at high school, $530,000.

▲† **Ky., Fort Campbell**—BARRACKS—U. S. Eng., 830 W. Broadway, Louisville, plans by Louis & Henry, Starks Bldg., Louisville, eight 3 story, brick barracks. $3,000,000. CD 1/23.

▲ **Ky., Hopkinsville**—HOUSING—Hopkinsville Municipal Housing Comm., plans by Meriwether Marye & Assoc., 236 E. Short St., Lexington, 180 family housing units. $1,450,000. CD 12/16/44.

▲ **Ky., Valley Station**—SCHOOL—Jefferson Co. Bd. Educ., 618 W. Jefferson St., Louisville, plans by Fred Hartstein, McDowell Bldg., Louisville, 3 story, brick school, $1,000,000, E. R. Ronald Assoc., 554 S. 3 St., Louisville, consult. engrs.

▲† **Md., Annapolis**—ACADEMIC BLDGS.—Dpt. Navy, U. S. Naval Academy, plans by Hall Border & Donaldson, 2517 St. Paul St., Baltimore, altering academic bldgs., mess hall, galley and Bancroft Hall, $3,000,000. CD 11/17/43.

▲ **Mich., Detroit**—ARTS CENTER—City, Bd. Educ., plans by Suren Pilafian, 153 E. Elizabeth St., community arts center bldg., Wayne University, $3,000,000. CD 3/30/43.

(Continued on page 105)

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AVAILABLE IN 3 TYPES

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- **NARROW STRIP—Pressure Seal**
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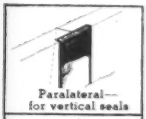
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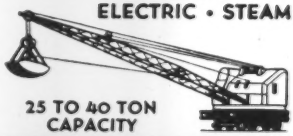

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And, there is a size MultiFoote for any job. If the 27-E, with its 50 batches isn't big enough, there is the 34-E Single with 50 batches (34 cu. ft. to the batch), or the DuoMix with 86 batches (34 cu. ft. to the batch).

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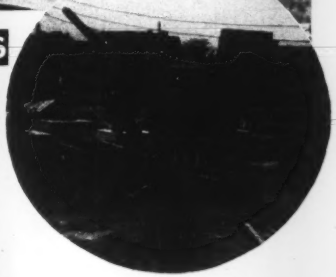

FLOORS

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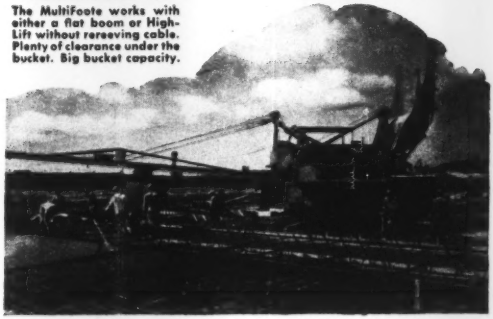

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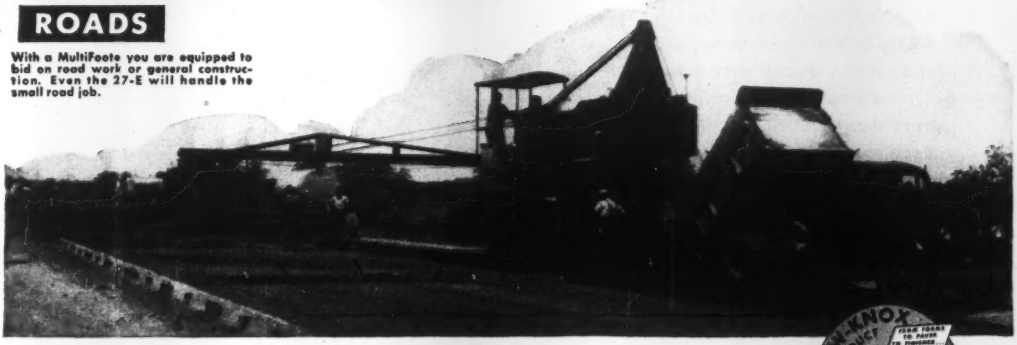
With a MultiFoote you are equipped to bid on road work or general construction. Even the 27-E will handle the small road job.



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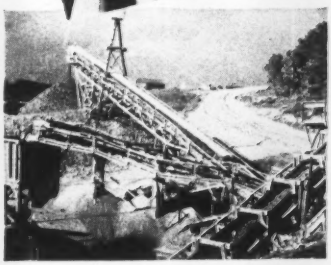
This is the main conveyor belt, 1400 feet long. It carries the stone from the stock pile to shipping point.



These 3 belts complete the 100% U.S. Rubber Conveyor Belt installation in the quarry.

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(Continued from page 102)

▲Mich., Detroit—CIVIC CENTER—City, Mayor Edward Cobo. City Hall, plans by Giffels & Vallet, Inc., 1000 Marquette Bldg., civic center, incl. hall and exhibits bldg. West Jefferson, Shelby and Detroit River, $14,000,000.

Minn., Robbinsdale—SCHOOL—Bd. Educ., Independent School Dist. 24, F. O. Bayard, clk., 4343 Unity Ave., plans by Haxby, Bissell & Belair, 1111 Nicollet Ave., Minneapolis school in Crystal Village. $600,000.

▲ Miss., Greenwood—SCHOOL—City defeated bonds, school imprvs. $1,750,000. CD 3/14.

▲ Mo., Kansas City—BUILDINGS—School Bd., Library Bldg., 9 and Locust Sts., Zone 6, $18,000,000 bond election May 29, new bldgs., $19,911,100, remodeling, rehabilitation, $4,356,165.

Mont., Laurel—SCHOOL—School Dist. 7, voted $460,000 bonds, elementary school, $660,000. Cushing & Terrell, 212½ N. Broadway, Billings, archts.

▲ Neb., Hastings—SCHOOL—Bd. Educ., Hastings, $1,850,000 bond election May 22, school constr. CD 11/13.

▲† N. M., Los Alamos—BUILDING—U. S. Atomic Energy Comn., Los Alamos, one 80x130 ft. rein.-con. bldg., pt. single story and pt. multi-storied, one approx. 35x100 ft. single story with bsmt., rein.-con. bldg., clearing, grading, site imprvs., utilities, incl. water, sewer, power and steam line. $900,000-$1,100,000. Black & Veatch, 4706 Bway., Kansas City, Mo., engrs.

Okla., Ponca City—AUDITORIUM, etc.—City defeated bonds, memorial auditorium and civic center, $650,000; agricultural bldg., roads and facilities, $75,000. Fred G. Fellows, Ponca City, consult. engr. CD 3/28.

Ore., Forest Grove—HIGH SCHOOL—School Bd., Forest Grove, plans by Donald W. Edmundson, Henry Bldg., Portland, voted bonds, Union High School, $687,000. CD 3/7.

▲Tex., Galveston—SCHOOLS—Galveston Independent School Dist., c/o Bd. Trustees, Alamo, 5200 N½ St., $1,000,000 supplemental bond issue voted Apr. 7, Senior High School for Whites, $3,350,000; $750,000 bond issue voted for school for Negroes, $2,400,000. Preston M. Geren, 905 N. P. Anderson Bldg., Fort Worth, archt., R. R. Rapp, Guaranty Bldg., consult. archt. CD 2/28.

Tex., Grand Prairie—HIGH SCHOOL—Grand Prairie Independent School Dist., Grand Prairie, plans by Adams & Adams, 518 W. Davis St., Dallas, Senior High School, $700,000.

▲ Wash., Grandview—SCHOOLS—School Bd., Grandview voted $195,000 bonds, Junior-Senior High School, $1,000,000. CD 2/12.

Wis., Edgerton—SCHOOL—Bd. Educ., plans by Law, Law, Potter & Nystrom, 121 S. Pinckney St., Madison, school, $675,000. CD 6/29/50.

Wash., Hoquiam—SCHOOL—School Bd., Hoquiam, plans by John Graham & Co., Dexter Horton Bldg., Seattle, 4 grade school and administration bldg. $650,000. CD 1/11.

▲ Alta., Calgary—GARAGE, etc.—Municipality, civic garage and stores department bldg. $1,000,000. J. Ivor Strong, City Hall, city engr.

▲ Alta., Calgary—CITY HALL—Municipality, city hall, $1,000,000. J. Ivor Strong, City Hall, city engr.

▲ Alta., Edmonton—ORDNANCE DEPOT—Canadian Commercial Corp., 70 Lyon St., Ottawa, Ont., Ordnance Depot, incl. 2 large rein.-con. warehouses north of here. $6,000,000. Main, Rensas & Mimsos, MacCosham Bldg., consult. engrs. CD 8/15/49.

▲ Ont., Chalk River—PLANT—National Research Council, Sussex St., Ottawa, constr. atomic reactor at Atomic Energy Plant, Approx. $30,000,000. C. D. Howe Co. Ltd., 301 Pigott Bldg., Hamilton, Ont., engrs. CD 2/8.

▲ Ont., Hamilton—DWELLINGS—Municipality, 360 dwellings Barton and Ottawa Sts. $3,000,000. F. H. Ferris, City Hall, city engr. CD 12/3/48.

▲ Sask., Saskatoon—HOSPITAL—Saskatoon City Hospital, Saskatoon, plans by Frank, Martin, Metropolitan Bldg., Saskatoon, Sask., and Govan, Ferguson, Lindsay, Kaminker, Maw, Langley & Keenleyside, 515 Jarvis St., Toronto, Ont., 75-bed hospital addn. $1,500,000-$2,000,000. CD 11/11/49.

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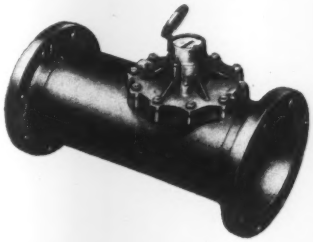

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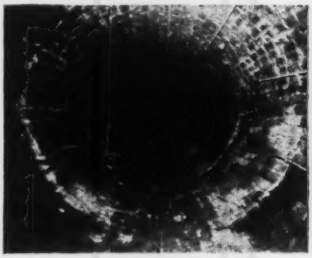

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▲ **Calif., Eureka**—HOSPITAL—Sisters of St. Joseph, Orange, plans by Frank T. Georgeson, 355 Stockton St., San Francisco, St. Joseph Hospital, $1,200,000.

Calif., Fontana—DWELLINGS—Fisher & Smith, 2224 S. Beverly Dr., Los Angeles, plans by R. L. Russel, 3543 Fletcher Dr., Los Angeles, 78 frame, stucco dwellings. $522,600.

▲ **Colo., Denver**—OFFICE—Farmers Union, 1555 Sherman St., 8 story office, 16 Ave. and Sherman St. $1,000,000.

▲ **Conn., Putnam**—CLUBHOUSE—Elks Club, Putnam, 3 story clubhouse, 4 stores, $1,000,000.

▲ **Del., Newark**—APARTMENT DEVELOPMENT—Owner, c/o Arthur A. Binns, 2221 Chestnut St., Phila., Pa., apartment development, Newark-Elkton Rd., $2,000,000.

Ill., Chicago—TEMPLE—Temple Emanuel, 701 Buckingham Pl., plans by Loeb, Schlossman & Bennett, 333 N. Michigan St., Zone 1, temple, auditorium chapel and parking, Sheridan Rd. and Thorndale St. $500,000.

Ind., Indianapolis—CHAPEL, etc.—Broadway Methodist Church 2820 Broadway, chapel and educational bldg. $500,000.

Mass., Boston—LAW—Northeastern University, 360 Huntington Ave., plans by Coolidge, Shepley, Bulfinch & Abbott, 1 Court St., brick, steel, concrete Law Bldg., Huntington Ave. $500,000.

Mich., Detroit—HOSPITAL—Childrens Hospital, 5224 St. Antoine St., plans by J. E. Stephens Assoc., engrs. and archts., 320 W. Lafayette St., 4 story, brick, steel, concrete hospital, Antoine St. $800,000.

Mich., Detroit—STUDENT ACTIVITIES—University of Detroit, 4001 W. McNichols St., plans by J. E. Stephens Assoc., 320 W. Lafayette St., 3 story student activities, West McNichols Co. $700,000.

▲ **Mo., St. Louis**—APARTMENT—Ambassador Apartments c/o Melvin Glick, vice pres., Glick Realty Estate Co., 8125½ Maryland Ave., Clayton, Zone 24, plans by Isadore Shank, 2032 Washington Ave., Zone 3, 12 story, bsmnt., 121 unit brick, concrete, steel apartment, 5340 Delmar Blvd. $1,500,000. Otto Heincke & Co., 122 N. 7 St., Zone 1, consult engrs.

N. J., Camden—DEPARTMENT STORE—Lit Bros., 8 and Market St., Phila., Pa., department store. Approx. $750,000.

N. Y., Jamaica—APARTMENT—Colony Apartment Corp., c/o Seelig & Finkelstein, archts., 153 Pierrepont St., Brooklyn, Zone 2, 6 story apartment, 139 St. 86 Ave. and 85 Dr. $795,000.

N. Y., Syracuse—OFFICE—Farmers & Traders Life Insurance Co., 418 State Tower Bldg., office bldg. Erie and Oswego Blvds. $560,000.

Pa., Castle Shannon—STORE, etc.—West Realty Co., 2729 Murray Ave., Pittsburgh, 1 story, brick store and service station, $600,000.

▲ **Pa., Phila.**—SCHOOL OF EDUCATION—University of Pennsylvania, 209 S. 36 St., building for School of Education, $1,200,000.

▲ **Pa., Pittsburgh** — SEMINARY — Pittsburgh-Xenia Theological Seminary, 616 W. North Ave., plans by Press C. Dowler, 130 7th St., 1 and 2 story bsmnt., brick, stone seminary. $2,000,000.

▲ **Pa., Pittsburgh**—SHOPPING CENTER—Philip Reicher & Assoc., 2271 Shady St., 1 story, bsmnt., 100,000 sq. ft. shopping center, in Ross Twp., $1,000,000.

Tex., Baytown—OFFICE—Humble Oil & Refining Co., Humble Bldg., Houston, plans by Milton McGinty, 2425 Ralph St., Houston, 2nd masonry office. $700,000.

Tex., Houston — DWELLINGS — A. B. Brewer, 4905 Walker St., 28 masonry, brick veneer dwellings, concrete pier and beam fdn., in southwest Houston. $550,000.

▲ **Tex., Houston**—DWELLINGS—Bert Coates, 2402 Darrington St., 15 masonry dwellings, in new area of Winslow and Tilden Sts., $375,000; 18 masonry dwellings, in new area of Conway and Buffalo Speedway, $450,000; 20 masonry dwellings, in new areas of Buffalo Speedway and Stanton Sts., $490,000.

▲ **Tex., Houston**—DWELLINGS—Hugh Wilkin C Development Co., 2302 Danville St., 40 high-priced masonry dwellings, concrete slab fdn., $800,000; 31 high priced masonry dwellings, $600,000, in new region, near Brays Bayou.

▲ **Tex., Lubbock**—DWELLING—Urban Development Corp., Lubbock, 403 frame dwellings, asbestos board siding, concrete slab fdn. $3,339,000; 77 mostly frame type dwellings, concrete slab fdn. (immediate constr.), in Vandalia Village, $661,000.

Tex., San Antonio—DWELLINGS—Ralph Eiser, 423 Meadow Lane, 65 addnl. frame dwellings, concrete and cedar post fdn. near Kelly Field. $510,000.

Tex., San Antonio—DWELLING—Roy Pletz, 1424 N. Brazos St., 96 addnl. frame dwellings, concrete post fdns., near Kelly Field. $775,000.

▲ **Alaska, Whittier**—APARTMENTS—Chris Berg & Assoc., 2720 Westlake Ave., Seattle, Wash., plans by Adrian Wilson, 816 W. 5 St., Los Angeles, Calif., apartments. $2,500,000.

▲ **Que., Chicoutimi**—HOSPITAL WING—Religieuses Hospitalieres de Quebec, Chicoutimi, Que., plans by Desgagne & Boileau, 181 Racine St., 12 story, 200-bed addnl. wing to Hotel Dieu Hospital, Hotel Dieu St. Approx. $2,000,000.

▲ **Que., Montreal**—HOSPITAL, etc.—Royal Victoria Hospital, Pine Ave., plans by Barott, Marshall, Montgomery & Merrett, Canada Cement Bldg., hospital

(Continued on page 108)

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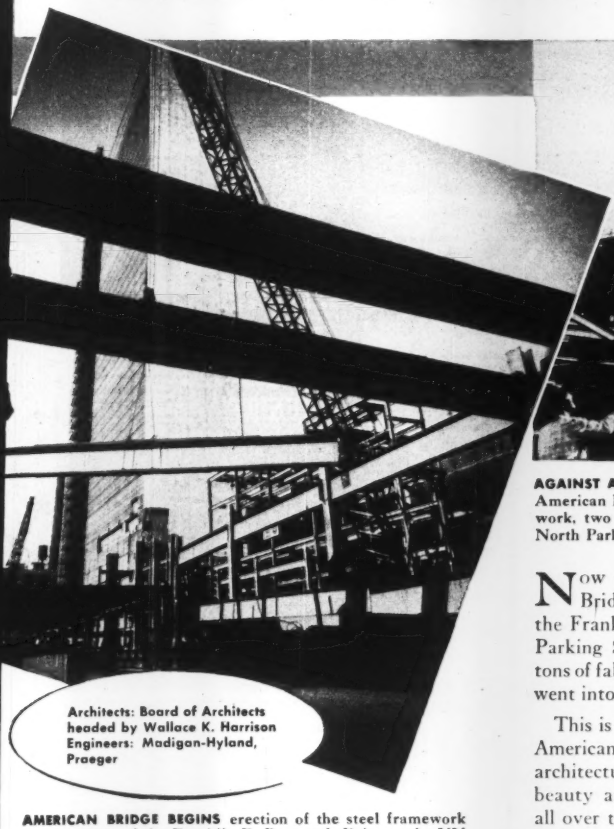

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(Continued from page 106)

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INDUSTRIAL BUILDINGS

▲ Calif., San Andreas—PLANT—Calaveras Cement Co., 315 Montgomery St., San Francisco, plant expansion, new kiln, $2,235,106.

▲ Calif., San Leandro—PLANT—Flintkote Corp., Pioneer Div., 5500 S. Alameda St., Vernon, Calif., mfg. folding box plant on 17 acre site. $2,000,000.

▲ Conn., Hartford—FACTORY—The Hartford Electric Steel Corp., 640 Flatbush Ave., factory, off Flatbush Ave. $1,000,000.

▲ Ind., Lafayette—PLANT—Eli Lilly & Co., 740 S. Alabama St., Indianapolis, plant at Elston 4 mi. southwest of here, on Wabash River, $10,000,000.

▲ Ky., Louisville—FACTORY—General Electric Realty Co., 1 River Rd., Schenectady 5, N. Y., factory, $3,000,000 Albert Kahn Associated Architects & Engineers, Inc., 345 New Center Bldg., Detroit, Mich., consult. engr.

Me., Bangor—WAREHOUSE—R. B. Dunning & Co., 54 Broad St., store and warehouse, parking and railroad siding. $500,000.

▲ Mich., Benton Harbor—FACTORY—The V. M. Corp., Benton Harbor, plans by The Austin Co., 510 N. Dearborn St., Chicago 11, Ill., radio parts factory, $1,000,000. CD 4/3.

▲ Mich., Lansing—PLANT—Oldsmobile Div. General Motors Corp., 1014 Townsend St., plans by Argonaut Realty Div., General Motors Bldg., Detroit, 700,000 sq. ft. compressor and turbine unit, mfg. sapphire jet 65 aircraft engine parts, W. Saginaw St. $6,000,000.

▲ O., Lima—FACTORY—Ex-Cell-O Corp., James K. Fulks, vice pres., 1200 Oakman Bldg., Detroit, Mich., 300x500 ft. factory mfg. small reciprocal parts for jet airplane engines, outside northern edge of city limits. $1,000,000.

▲ Pa., Sharon—MILL—Sharon Tube Co., Sharon, butt weld-mill. $2,000,000 Aetna Standard Eng. Co., Home Savings & Loan Bldg., Youngstown, O., consult. engr. and archt. CD 2/20.

▲ S. C., Rock Hill—PLANT—Celanese Corp., Rock Hill, S. C. plant addn. $20,000,000.

▲ Tex., Garland—REPAIR SHOP and FREIGHT DEPOTS—Missouri-Kansas-Texas Lines, K. H. Hanger, ch. engr., Katy Bldg., Dallas, Zone 2, light repair shop, $300,000; freight depots $1,000,000, near here.

▲ Tex., Houston—PLANT—Eastern States Petroleum Co., Inc., Ship Channel, aviation gasoline plant, near here. $2,750,000. CD 1/7/48.

▲ Tex., Houston—REFINERY—Ethyl Corp., City Natl. Bank Bldg., doubling capacity refinery and chemical plant now under construction and also additionally-planned. $28,000,000.

▲ Tex., Houston—LABORATORY—Humble Oil & Refining Co., Humble Bldg., plans by MacKie & Kamrath, 2713 Ferndale St., research laboratory, Buffalo Speedway and W. Alabama St. $2,000,000.

▲ Tex., Pasadena—REFINERY—Crown Central Petroleum Corp., Pasadena, refinery expansion. $1,500,000.

▲ Ont., New Toronto—MANUFACTURING EXPANSION—Anaconda American Brass, Ltd., New Toronto, expansion manufacturing facilities incl. tube mill exten., and new copper department. Approx. $4,000,000.

▲ Ont., Plantagenet—REFINERY—Ottawa Valley Sugar Refinery, Louis Pasquiere, mgr., Plantagenet, sugar beet refinery. Approx. $4,000,000.

▲ Que., Montreal—PLANT—Sherry Corp., 527 Sussex Toronto, Ont., plans by E. C. Miller, 485 McGill St., Montreal, plant, Cote de Liesse Rd., Approx. $1,000,000. T. Pringle & Son, Ltd., 585 McGill St., engr.

UNCLASSIFIED

▲ California—TRANSMISSION LINES—Pacific Gas & Electric Co., 245 Market St., San Francisco, Calif. $4,000,000 transmission line from Eureka to Cottonwood Shasta Co.; $487,000 condenser kilowatt emperer to be installed at Humboldt sub-station. CD 10/1/46.

▲ Mo., St. Louis—PARK—City, Frank J. McDevitt, pres., Pub. Service, 304 City Hall, park on 1 block wide 22 acre tract, from Gass Ave. to Carr St. between 20 and 21 Sts., then to Jefferson Ave. for residents of DeSoto-Carr Housing. $1,000,000. CD 6/23/44.

N. Y., Binghamton—RADIO and TV STATION—Station WNBF, Arrington Hotel radio and TV station, studio and office. $350,000.

▲ Texas—PIPE LINE—Phillips Petroleum Co. & Assoc., Bartlesville, Okla., pipe line gathering systems for pools in Midland, Upton, Glasscock and Reagan Counties, $650,000; approx. 145 mi. 12 in. trunk pipe line, Reagan, Midland, Upton, Glasscock Counties, $1,750,000.

† Tex., Amarillo—GAS SYSTEM—U. S. Atomic Energy Comm., Jos. R. Turan, ch. Contract Div., Los Alamos, gas sys. at Silas Mason Pantex Ordnance Plant, near here. $75,000-$100,000; electric power distr. sys., $750,000-$900,000. CD 4/6 under Public Buildings.

▲ Tex., Garland—RAILWAY YARDS—Missouri-Kansas-Texas Lines, K. H. Hanger, ch. engr., Katy Bldg., Dallas, Zone 2, railway yards, (trackage, switches) near here, $1,500,000.

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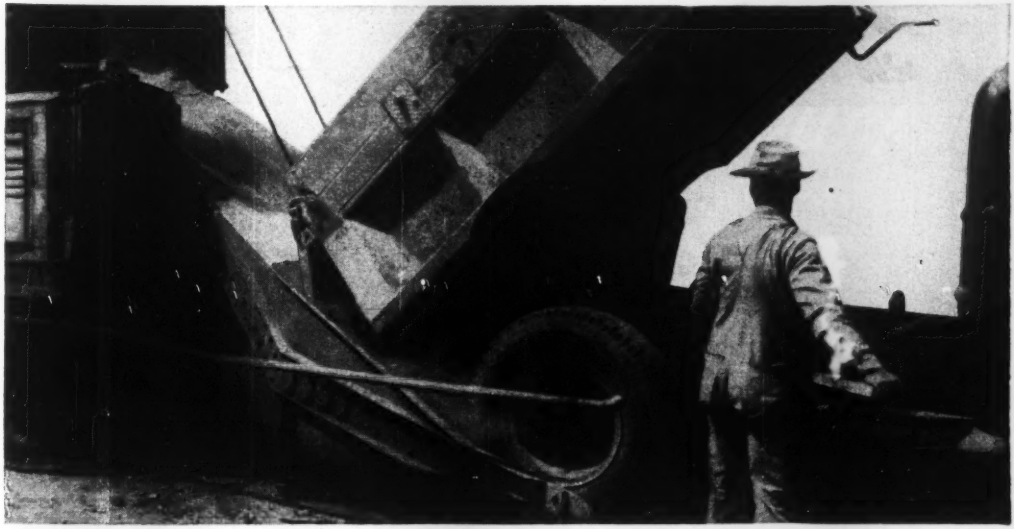

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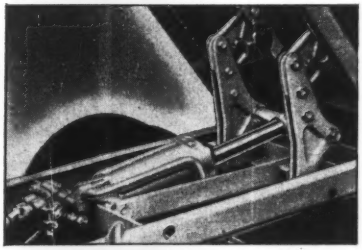

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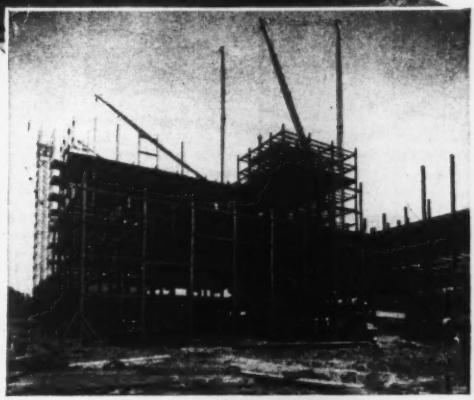

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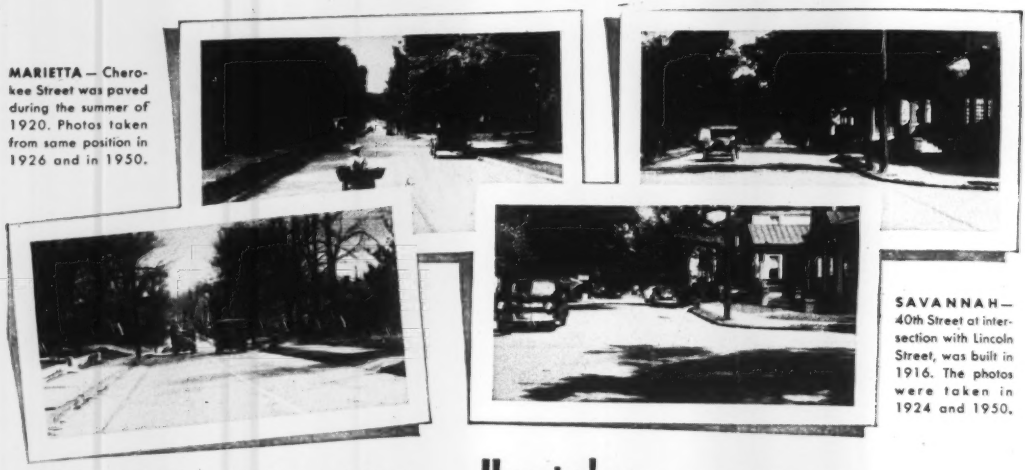
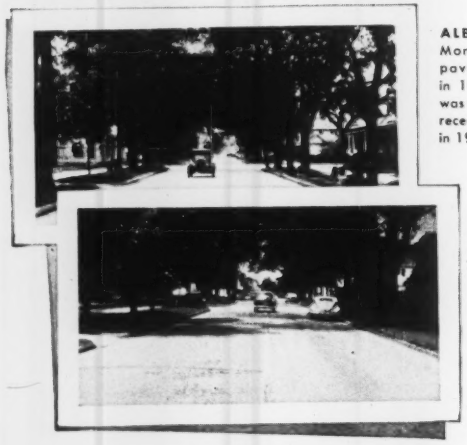


MARIETTA — Cherokee Street was paved during the summer of 1920. Photos taken from same position in 1926 and in 1950.

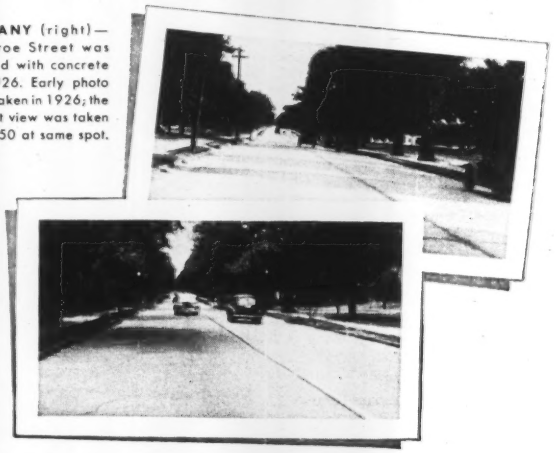
SAVANNAH — 40th Street at intersection with Lincoln Street, was built in 1916. The photos were taken in 1924 and 1950.

ATLANTA (below) — 5th Street, looking toward Biltmore Hotel. Paved in 1923. Photos were taken in 1924 and 1950.

LOUISVILLE (below) — Broad Street was paved with concrete in 1925. The pictures were taken in 1926 and 1950.



ALBANY (right) — Monroe Street was paved with concrete in 1926. Early photo was taken in 1926; the recent view was taken in 1950 at same spot.



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CONSTRUCTION REPORTS—Third Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 1—Massachusetts
May 15—Massachusetts

LOW BIDDERS—HEAVY CONSTRUCTION

† **Westcott Constr. Co.**, 52 N. Washington St., North Attleboro, Mass. Low Bidder, **$1,348,000.** sewage disposal plant, EAST PROVIDENCE, R. I. Town, Town Hall, East Providence, R. I. Bids Apr. 2. CD 3/30.

CONTRACTS—BUILDINGS

† **George A. Fuller Co.**, 11 Beacon St., Boston, Mass. Contract Awarded. **$350,000.** BANK addn., alterations, 30 Pearl St., BOSTON, MASS. Federal Reserve Bank of Boston, 30 Pearl St., Boston, Mass. Bids Jan. 31. CD 1/24.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
ROADS
May 1—Maryland
May 10—Delaware

† **N. J., Bayonne**—FUEL PIPE LINE—B.A. 5/1—P. Wks. Officer Third Naval Dist., 90 Church St., New York, 7, N. Y., fuel pipe line from Bldg. 44C to Berth n-7, at Naval Supply Depot, NOY 24474, Spec. 26725.

New York—PLAYGROUNDS—B.A. 5/1—Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York, Zone 21, playground at Union Turnpike, 141 St. and Vleigh Pl., Contr. No. QG-14300-150N; playground 106 St., Atlantic Ave. to 94 Ave., Contr. No. QG-18200-150 N, both Queens Co. Plans deposit $10 each.

New York—PARKING FIELD—B.A. 5/4—Long Island State Park Comn. Belmont Lake State Park Babylon, N. Y. Parking Field No. 1, incl. refreshment stand and comfort station at Jones Beach State Park, Nassau Co. CD 7/25/45.

N. Y., New York—TUNNEL FINISH—B.A. 5/9—At office Chief Engineer of The Port of New York Auth., 111 8th Ave., New York, Zone 11, interior finish for the West 179 Street Tunnel, of George Washington Bridge, Contr. GWB 120.017. Plans deposit $25. CD 3/21; under LB.

New York—PARK IMPRVS.—B.A. 5/23—Palisades Interstate Park Comn., Administration Headquarters, Bear Mountain, N. Y., construct sewage treatment plant for 10,000 population and 200,000 gal. concrete reservoir in the Anthony Wayne area (Queensboro), Harriman State Park, Orange Co. Plans deposit $5. adv. ENR 4/26. CD 6/19/44.

BIDS ASKED—BUILDINGS

Pa., New Castle—SCHOOLS—B.A. 4/24—St. Marys Roman Church, New Castle, 2 story, bsmnt., 57x125 ft., brick parochial school. $300,000. Marlier & Johnstone, 1107 Empire Bldg., Pittsburgh, archts.

Pa., Pittsburgh—PLANT—B.A. 4/24—Hachmeister, Inc., 2332 Forbes St., 1 and 2 story, brick, concrete, steel mfg. plant, Stowe Twp. $500,000. Prack & Prack, 509 Martin Bldg., archts.

† **N. J., Port Newark**—OFFICE SPACE—B.A. 4/27—P. Wks. office, Third Naval Dist., 290 Church St., New York, 7, N. Y., addnl. office space Bldg. No. 24, Naval Industrial Reserve Shipyard, NOY 26093, Spec. N. 28193.

Md., Hagerstown—HOUSING—B.A. 5/9—Hagerstown Housing Auth., fifty 2 story, brick, concrete, cinder block houses, $450,000. Plans deposit $50 Proctor & Englehardt, 8616 Georgia Ave., Silver Spring, archts. CD 2/2.

Md., Towson—SCHOOL—B.A. 5/9—Baltimore Co. Bd. Educ., 1 story, brick, concrete, steel Lutherville School, $550,000. Plans deposit $25. Wm. E. Grey, 328 N. Charles St., Baltimore, archt. Crout, Snyder & Crandall, 500 American National Bldg., Baltimore, struct. engrs., Egli & Gompf, Inc., 1019 N. Calvert St., Baltimore, mech. engr. Bids 3/1 rejected. CD 3/20, under LB.

Pa., Erie—SCHOOL—B.A. 5/9—School Dist. of Erie, o and French Sts., 2 story, brick, concrete Edison School addn. $350,000. Walter Monahan, 406 Marine Bank, archt. CD 11/20.

Pa., Grove City—HOSPITAL—B.A. 5/10—Grove City Hospital, Grove City, 2 story, brick hospital addn. $300,000. W. G. Eckles Co., New Castle, archts. CD 10/26/50.

▲ **Md., Annapolis**—SCHOOL—B.A. 5/22—Anne Arundel Co. Bd. Educ., 207 Hanover St., 2 and 3 story, cinder block, brick Junior High School, $1,800,000. Plans deposit $50, Harder & Dressell Assoc., 5 Annapolis Hy., Glen Burnie, archts. CD 9/6/50.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **Dravo Corp.**, Neville Island, Pittsburgh, Pa. Low Bidders, **$7,967,667.** est. $8,000,000. reconstruction Lock 2, Monongahela River, concrete land side locks with appurtenances, Braddock, Allegheny Co., Serial NO. CIVENG 36-058-51-75, PENNSYLVANIA. U. S. Eng., 924 New Federal Bldg., Pittsburgh, 19, Pa. CD 3/1.

LOW BIDDERS—BUILDINGS

▲ **Bethlehem Steel Co.**, 25 Broadway, New York 4, N. Y. Low Bidder, **$2,840,950,** structural steel for 74th St. POWER PLANT, NEW YORK, N. Y. Bd Transportation, 370 Jay St., Brooklyn, 1, N. Y. Bids Apr. 6. CD 3/22.

† **Armiger Constr. Corp.** 2127 Maryland Ave., Baltimore, Md. Low Bidder. **$319,995.** 1 story, concrete, steel, 6,000 sq. ft. EXPERIMENTAL LOADING and FILLING BLDG., EDGEWOOD, MD. U. S. Eng., 24 and Maryland Aves., Baltimore 18, Md. Ralph M. Parsons Co., 617 S. Olive St., Los Angeles, Calif., archts. CD 3/1.

CONTRACTS—HEAVY CONSTRUCTION

† **Thompson Constr. Corp.**, 11 N. Pearl St., Albany 17, N. Y. Contract Awarded. **$444,243,** addnl. facilities, Part II, Hermes Proj., MALTA, (P. O. Ballston Spa), N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. Bids Mar. 28. CD 4/3, under LB.

United States Pipe & Fdry Co., Lincoln-Liberty Bldg., Phila., Pa. Contract Awarded. **$266,803.** 51,800 ft. 6-to-16-in. water lines, 117 valves, 6-to 16-in., fire hydrants, ANNAPOLIS, MD. City, Mayor and Alderman, City Hall, Annapolis, Md. Bids Mar. 29. CD 3/15.

CONTRACTS—BUILDINGS

▲ **Wright Village**, c/o Leonard G. Feinen, archt., 320 Lincoln Ave., Hasbrouck Heights, N. J. Owner Builds **$5,500,000** garden APARTMENT PROJECT for 528 families on 32-acre tract, Terhune Ave., LODI, N. J.

B. V. Zamore, c/o Petroff & Clarkson, archts., 132 E. 58 St., New York 22, N. Y. Owner Builds, **$480,000.** 40 one-family HOUSES, Route 17, RIDGEWOOD, N. J.

Brown Bros., 2701 Walnut St., Altoona, Pa. Owner Builds. 1 story bsmnt., 120x126 ft. block, potato chip FACTORY, ALTOONA, PA. George Puderbaugh, 1511 13th St., Altoona, Pa., archt.

E. W. Falck Co., Beaver Rd., Leetsdale, Pa. Contract Awarded. Approx. **$85,000.** 1 story, 32,000 sq. ft. steel, frame MANUFACTURING BLDG., AMBRIDGE, PA. Weismann Fitting Co., Ambridge, Pa.

Cook Anderson Co., Beaver, Pa. Contract Awarded. Approx. **$300,000.** 3 story, bsmnt., 39x116 ft. brick, concrete, NURSES HOME, BEAVER FALLS, PA. Providence Hospital, Beaver Falls, Pa. CD 12/18.

John Mohr & Sons, 3200 E. 96 St., Chicago, Ill. Contract Awarded, BLAST FURNACE with 1,000 tons iron daily capacity, MIDLAND, PA. Crucible Steel Co. of America, Midland, Pa. CD 1/4.

Acme Engineering Co., 5131 Cypress St., Pittsburgh, Pa. Contract Awarded. Approx. **$100,000.** 1 story, 75x132 ft., brick, block WAREHOUSE and SHOP, Hall Sta., Patton Twp., PITTSBURGH, PA. John Conte, (Conte Equip. Co.) Brushton Ave., Pittsburgh, Pa. C. A. Lake, Sharpsburg, Pittsburgh, Pa., archt.

Sordoni Constr. Co., Forty Fort, Pa. Contract Awarded. Approx. **$150,000.** 1 story, 20,000 sq. ft. rein.-con. frame WAREHOUSE and LABORATORY, PORT ALLEGANY, PA. Pittsburgh Corning Glass Co., Port Allegany, Pa. CD 1/30.

Morrow Bros., Inc., 2315 N. Charles St., Baltimore, Md. Contract Awarded. **$515,200.** 3 story, bsmnt., 48x145 ft., steel, rein.-con. Levindale INFIRMARY, Belvedere and Greenspring Aves., BALTIMORE, MD. Associated Jewish Charities, Monument and Eutaw Sts., Baltimore, Md. CD 4/9, under LB.

Rushbrook Manor Co., 1000 Reverdy Rd., Baltimore, Md. Owner Builds. **$300,000.** thirty-six 1 story, brick family DWELLINGS, BALTIMORE, MD.

Sherwood Manor, Inc., 1600 Sherwood Ave., Baltimore, Md. Owner Builds. **$397,700.** forty-one 2 story, brick, RESIDENCES, 1600 block Walters Wood Rd., BALTIMORE, MD.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 2—Louisiana—Maine
May 18—Alabama

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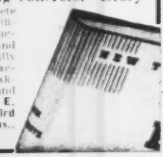

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STREETS AND ROADS

May 2—Louisiana
May 18—Alabama

BIDS ASKED—HEAVY CONSTRUCTION

† **Tenn., Tullahoma**—B. A. 5/1—U. S. Eng., Tullahoma, clearing Elk River reservoir. CD 11/14/49 under Public Buildings.

† **Florida**—B.A. 5/1—U. S. Eng., 575 Riverside Ave., Jacksonville 1, Fla., dredging channel alignment vicinity of Delray Beach in Intracoastal Waterway, Jackson to Miami, Serial No. GIVENG 08-123-51-72. CD 6/9/44.

La., Marksville—B.A. 5/8—Town, exten. sewage collection sys. Porter, Barry & Switzer, 1730 Main St., Baton Rouge, engrs.

† **Miss., Biloxi**—AIRPORT IMPRVS.—B.A. 5/8— U. S. Eng., P. O. Box 1169, 2301 Grant St., Mobile 7, Ala., clearing, grubbing, grading 80 acres, Keesler Air Force Base, Neg. 51-86. Plans deposit $5. CD 2/7.

† **Va., Norfolk**—GASOLINE DISTRIBUTION SYSTEM —B. A. 5/8—Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Zone 11, gasoline distribution sys., alteration to piping at the U. S. Naval Air Station, Spec. No. 26537. NOY-24236. Plans deposit $10.

† **Va., Norfolk**—RECREATION FACILITIES—B. A. 5/8 —Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Zone 11, enlisted recreation facilities, Naval Base (Marine Barracks) Spec. No. 26762. NOY-24586. Plans deposit $10.

N. C., Wilson—B.A. 5/9—At office F. R. Green, city mgr., Wilson, street paving, Sec. A, 19,600 lin. ft. clearing channel banks, Sect. B, 28,430 lin. ft., 15-to 54-in. rein.-con. pipe, 92 manholes, 169 catch basins. Plans deposit $25. L. E. Wooten & Co., 306 S. Dawson., Raleigh, engrs.

† **Ga., Fort Benning**—B. A. 5/14—U. S. Eng., P. O. Box 889, Savannah, surfacing motor pool areas.

N. C., Wendell—B.A. 5/22—Town, M. C. Todd, mayor, Wendell, 500,000 gal. rein.-con. covered water sys. reservoir with piping pump house and automatic controls. Plans deposit $15. Joseph J. Farlow, Raleigh Bldg., Raleigh, engr.

BIDS ASKED—BUILDINGS

Ga., Thomasville — WAREHOUSE — B.A. 5/1 — W. J. Powell, Thomasville, warehouse. W. Elliott Dunwoody Jr., First National Bank Bldg., Macon, archt.

Tenn., Jellico—HIGH SCHOOL—B.A. 5/2—Campbell Co. Bd. Educ., Jacksboro, 40,000 sq. ft. high school. Approx. $300,000. Bealer & Wilhoit, Journal Bldg., Knoxville, archts.

Ga., Columbus—SCHOOL—B. A. 5/8—Muscogee Co., Meeler Hill Elementary School. E. Oren Smith, 1236 Wildwood Ave., Columbus, archts. CD 6/26/50.

† **Va., Portsmouth**—BUILDING REPAIRS—B. A. 5/8 —Pub. Wks. Office, Headquarters, Fifth Naval Dist., U. S. Naval Base, Norfolk, Zone 11, repairs to Bldg. No. 62, Spec. No. 26567, NOY-24269 and repairs to Bldg. No. 195, Spec. No. 26563, NOY-24265, at the Norfolk Naval Shipyard. Plans deposit $10 each.

N. C., Winston-Salem—YMCA and YWCA BLDG—B.A. 5/10—Young Mens Christian Assn. and Young Womens Christian Assn., c/o Macklin & Stinson, archts., 226 N. Trade St., Patterson Avenue Y. M. C. A. and Y. W. C. A. bldg for colored. Plans deposit $25. CD 4/26/49.

La., Newellton—SCHOOL—B.A. 5/22—Tensas Parish School Bd., Negro High School. H. H. Land, Ouachita National Bank Bldg., Monroe, archt.

N. C., Chapel Hill—DENTAL SCHOOL—B. A. 5/24 —University of North Carolina, W. D. Carmichael, controller, Gerrard Hall, Chapel Hill, dental school. Plans deposit $25. Northrup & O'Brien, 602 Reynolds Bldg., Winston-Salem, archts.

Va., Hanover—DORMITORY, etc.—B. A. 5/24—State of Virginia, Richmond, Dormitory No. 3 and academic school at Hanover Industrial School for Negroes, $340,000. Plans deposit $50. Merrill C. Lee, 601 E. Franklin St., Richmond, archt.

LOW BIDDERS—HEAVY CONSTRUCTION

† **Clyde J. Keyes**, 20 11 St. S., St. Petersburg, Fla. Low Bidder. $643,990. Bulk fuel storage facilities at MacDill Air Force Base, MACDILL FIELD, FLA. U. S. Eng., P. O. Box 4970, Jacksonville, Fla. CD 3/15.

† **Jahncke Service, Inc.**, 814 Howard Ave., New Orleans, La. Low Bidder. $546,000. 1,050,000 cu. yd. hydraulic fill levee enlargement along south shore of Lake Pontchartrain, Inv. 51-172. Jefferson Parish, LOUISIANA. U. S. Eng., foot of Prytania St., New Orleans 9, La. Bids Apr. 13. CD 3/28.

Garrett, Moon & Pool, Blackstone, Va. Low Bidder, $103,442, four-lane bridge and approaches at Pugh's Run north of Woodstock, U. S. 11, Shenandoah Co.***C. H. Lawson, Williamsburg, Va., $103,877, Blackwater River bridge and 1.07 mi. approach roads Route 40 between Waverly and Spring Grove, Surray and Sussex Counties, VIRGINIA. State Hy. Dpt., Richmond. Bids April 17. CD 4/3.

▲ **J. R. Ford Co., Inc.**, Lynchburg, Va. Low Bidder, $72,752, hard surf. and a bridge 2.03 mi. Secondary Route 600, near Stony Point Mills, Cumberland Co.***City Const. Co. Inc., George Washington Hy. and Virginian R.R., Portsmouth, Va. $63,290, c. conc. wid'n., curb, gutter and sidewalk 1.98 mi. U.S. 60 north from the north corporate limits of Newport News, Warwick Co.***C. H. Lawson, Williamsburg, Va., $82,610, straightening and widen. 4.59 mi. Route 5, between the Henrico county line and Charles City Court House, Charles City Co.***Clyde R. Royals, Hampton, Va., $170,375, wid'n. and retaining wall 0.66 mi. Route 167, on the Shore Dr. in Newport News, Newport News City.

Thompson-Arthur Const. Co., Danville, Va., $67,944, reconstruction 2.12 mi. Route 46, from Lawrenceville to Cochran, Brunswick Co.***T. F. Franklin, R.F.D. 2, Salem, Va., $73,007, stabil. base and hard surf. 7.97 mi. Secondary Route 603 between Vicksville and Unity, Southampton Co.***Perkins-Barnes Const. Co., Inc., Blackstone, Va., $373,128, 24-ft. conc. pavement 4.88 mi., U. S. 58 extending the heavy-duty roadway from Courtland to 1.3 mi. east of Emporia, Greensville and Southampton Counties.

T. E. Brown, Charlotte, N. C., $306,930, 24-ft. c. conc. pavement and bridges U. S. 58 over Pole Branch and Colemans Creek to complete the rebuilding of the route from Boydton to U.S. 1 at Big Fork, Mecklenburg Co.***Faulconer Constr. Co., Natl. Bank Bldg., Charlottesville, Va., $165,359, roadway and concrete arch 1.32 mi. U.S. 211 to replace Mill Creek bridge near Hamburg, Page Co. VIRGINIA. State Hy. Dpt., Richmond, Va. Bids April 17. CD 4/3.

† **Sam Finley, Inc.**, 1615 Cleveland Ave., S.W. Roanoke, Va. Low Bidder, $549,810, cold b. conc. Type H-1, $496,460, hot b. conc. Type II, Proj. 2NS-P4 Q6, 27 mi. Blue Ridge Parkway from Black Mountain Gap to U.S. Route 70, 6 mi. from Asheville, Yancey and Buncombe Counties, NORTH CAROLINA. Bureau Pub. Roads, Dpt. Commerce, 920 S. Jefferson St., Roanoke, Va. Bids April 17. CD 3/20.

▲ **Dickinson, Inc., Monroe, N. C.**—Low Bidder, $1,637,132. Donaldson Army Air Field imprvs., GREENVILLE, S. C. U. S. Eng., 33 Custom House, Charleston, S. C. Bids April 16.

† **Cecil's Inc.**, Spartanburg, S. C. Low Bidder, $403,558. addnl. buildings at Shaw Air Base, Serial No. Eng. 38-081-51-3. SUMTER, S. C. U. S. Eng., 33 Custom House, Charleston, S. C. Bids April 16. CD 4/11.

Killoven Co., Appleton, Wis. Low Bidder. $398,511. rural distr. lines, Bell Co., KENTUCKY, Cumberland Valley Electric Co-operative, Corbin, Ky. Bids Mar. 27. CD 3/23.

LOW BIDDERS—BUILDINGS

Plate Constr. Co., Parkersburg, W. Va. Low Bidder, $436,000. 5 story bsmnt., 49x79 ft., steel, brick, concrete HOSPITAL addn., FAIRMONT, W. VA. City, City Bldg., Fairmont, W. Va. Bids Mar. 31. CD 3/16.

State Bd. Control, Charleston, W. Va., rejected bids 2 story, bsmnt., steel, brick, stone PHYSICAL EDUCATION bldg., School for Deaf & Blind, ROMNEY, W. VA. CD 4/13, under LB.

W. G. Hollifield Constr. Co., Asheville, N. C. Low Bidder, $373,977, Hill Street SCHOOL, ASHEVILLE, N. C. City, Oak St., Asheville, N. C. Bids Apr. 12. Lindsey M. Gudger, 52 Carter St., Asheville, archt.

CONTRACTS—HEAVY CONSTRUCTION

† **Rogers & McGrath**, 1221 Kenilworth Ave., N. E., Wash. D. C. Contract Awarded $168,500, 2 sewage disposal plants at Camp Upshur and Barrett, QUANTICO, VA. Pub. Wks. Office, Potomac River Naval Command, Naval Gun Factory, Wash., D. C. CD 4/5, under LB.

† **Henry Newton Co.**, Decatur, Ga. Contract Awarded. $73,842. Misc. concrete construction, ING, MOB and 8,000) Eng 09-133-51-72. FORT JACKSON, S. C. U. S. Eng., P. O. Box 889, Savannah, Ga. Bids April 12.

A. P. White & Assoc., 104 Latta Arcade, Charlotte, N. C. Contract Awarded. Approx. $40,000. 17,000 lin. ft. 16 in. c. i. water mains, ANDERSON, S. C. Duke Power Co., c/o contractor.

Triangle Constr. Co., Inc., Morgan Bldg., Greenville, S. C. Contract Awarded, $167,031, Sects. 1 and 2, WW imprvs., maintenance bldg., parking shed, driveways, GREENVILLE, S. C. Comr. Pub. Wks., Greenville, S. C. Black & Veatch, 4706 Broadway, Kansas City, Mo., engrs.

† **Hugh McMath Constr. Co.**, Brennan Rd., Columbus, Ga. Contract Awarded. $909,645. Concrete aprons at Warner Robins Air Force Base, MACON, GA. Bids Apr. 6. CD 4/16, under LB.

▲ **Michigan Sewer Constr. Co.**, 21720 W. 8 mi. Rd., Southfield, Detroit Mich. Contract Awarded. $1,240,933. Diversion tunnel***L. W. Wells Constr. Co., 1420 Miller St., Saginaw, Mich., $592,562, installing Sec. A-1, $909,439 Sec. A-2***J. E. Milam, 8940 1 Ave. S., Birmingham, Ala., $1,234,570, Sec. 3, all Village Creek Collecting Sewers System, BIRMINGHAM, ALA. Jefferson Co., Court House, Birmingham, Ala. Bids Apr. 3. CD 4/16, under LB.

CONTRACTS—BUILDINGS

Schriber Contracting Corp., 615 3rd St. N. E., Wash. D. C. Contract Awarded. $564,988. addn. to Hoffman-Boston SCHOOL, 1415 S. Queen St., ARLINGTON, VA. Arlington County School Dept., 2732 Wilson Blvd., Arlington, Va. Bids Mar. 20, awarded Apr. 14. CD 3/30, under LB.

▲ **Doyle & Russell**, Central Natl. Bank Bldg., Richmond, Va. Contract Awarded. Approx. $1,300,000. MUSEUM addns., alterations, RICHMOND, VA. Virginia Museum of Fine Arts, Richmond, Va. Bids Feb. 28. CD 1/25.

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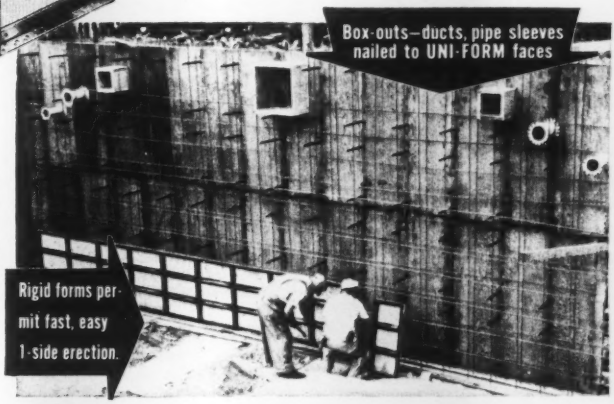

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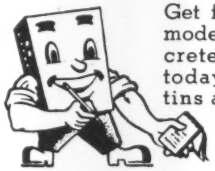

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CONTRACTS—BUILDINGS

▲ **Knox Bros. Co.,** Thomson, Ga. Owner Builds. Approx. $2,500,000. 500 HOMES, NORTH AUGUSTA, S. C.

McDonald Constr. Co., Martintown Rd., North Augusta, Ga. Owner Builds. Approx. $750,000. 165 HOMES, NORTH AUGUSTA, S. C.

▲ **Fuller Constr. Co.,** 202 13 St., Augusta, Ga. Owner Builds. $2,000,000. 150 HOMES, off Washington Rd., AUGUSTA, GA.

▲ **Jerome Constr. Co.,** 14 N. Abercorn St., Savannah, Ga. Contract Awarded. $1,200,000. APARTMENT DEVELOPMENT on Sanel Bar Berry Rd., AUGUSTA, GA. Marion Corp. and others, c/o contractor.

J. F. Holley, 905 6 Ave. N., Birmingham, Ala. Contract Awarded. $400,000. Y. M. C. A. BLDG., ANNISTON, ALA. Anniston Young Mens Christian Assn., Anniston, Ala.

Ralph M. Parsons Co., 617 S. Olive St., Los Angeles, Calif. Contract Awarded. $500,000. sulphur recovery PLANT, BATON ROUGE, LA. Consolidated Chemical Industries, Inc., 3832 E. 26 St., Los Angeles, Calif.

▲ **Piper Engineering Co.,** 925 Liberty Ave., Pittsburgh, Pa. Contract Awarded. $10,000,000. Electric furnace steel PLANT, OWENSBORO, KY. Green River Steel Corp., Owensboro, Ky. CD 11/28.

▲ **United Engineers & Contractors,** 1401 Arch St., Phila., Pa. Contract Awarded. $10,000,000. Calcium, carbide mfg. PLANT to be operated by National Carbide Co., PADUCAH, KY. Air Reduction Co., Inc., 17 and Allegey Aves., Phila., Pa.

Cape County Homes, Inc., c/o Joel A. Montgomery, Cape Girardeau, Mo. Owner Builds. Approx. $300,000. RESIDENTIAL DEVELOPMENT, MEMPHIS, TENN.

Kemmons Wilson, Inc., 4985 Summer Ave., Memphis, Tenn. Owner Builds. Approx. $350,000. 30 HOMES, MEMPHIS, TENN. Northern Perrell, Windrom, 236 Court Ave., Memphis, Tenn., archts.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
May 10—Wisconsin
STREETS AND ROADS
May 10—Wisconsin

Ind., Hobart—B.A. 5/2—City, City Hall, 2 sewage treatment works, 1, primary type and 2, activated sludge type, $800,000. Consoer, Townsend & Assocs, 351 E. Ohio St., Chicago, 11, Ill., engrs. Bids 3/30 rejected. CD 2/16.

Mich., Jackson—B.A. 5/2—State, A. N. Languis, dir. State Bldg. Dpt., Lansing, settling tanks, chlorinator, sewage treatment plant addns., imprvs. Fargo Eng. Co., 120 W. Michigan Ave., engrs. Extended date. CD 3/30.

Ohio—B.A. 5/7—Comrs. Montgomery, Darke and Miami Counties, c/o Court House, Dayton, five mi. ditch to drain land in portions Montgomery, Darke and Miami Counties, beginning near Phillipsburg and exten. northeast.

BIDS ASKED—BUILDINGS

Ill., Hinsdale—CHURCH—B.A. 5/2—St. Isaac Jogues Parish, Hinsdale, church, $300,000. McCarthy & Smith, 69 W. Delaware St., Chicago 10, Ill., archts.

Mich., Jackson—SCHOOL—B.A. 5/2—East Jackson School Dist. Bd. Educ., D. H. Conlon, secy., brick, steel school, $350,000. Plans deposit $20. Binda & Haughey, 510 Post Bldg., Battle Creek, assoc. archts. CD 4/12.

▲ **Ill., Chicago**—HOSPITAL—B.A. 5/10—Sisters of the Ressurrection, 7432 N. Talcott St., Zone 31, 5 story, 18-bed, rein.con. framing, brick, stone hospital, $2,500,000. Schmidt, Garden & Erikson, 104 S. Michigan Ave., Zone 3, archts. CD 4/13.

Ill., Bellwood—FACTORY—Bids Asked—National Wheel & Parts Mfg. Co., 1808 S. Michigan St., Chicago, Zone 16, 1 story, steel, concrete, brick, 37,000 sq. ft. FASTORY, 31 Ave. and Oak St., $350,000. Eric A. Stenbeck, 327 S. LaSalle St., Chicago, Zone 4, archt.

Ill., Chicago—PLANT—Bids Asked—Carl Buddig & Co., 11116 S. Vincennes Ave., meat packing plant addn. $80,000. Ben & Geo. Larson Co., 506 W. 63 St., Zone 21, engr.

▲ **Ill., Chicago**—APARTMENT—Bids Asked—Rosemont Plaza Apartments, 6301 Sheridan Rd., Zone 40, 14 story, 301-unit concrete apartment $2,750,000. Monroe Bowman & Assocs., 221 N. LaSalle St., Zone 1, archts.

LOW BIDDERS—HEAVY CONSTRUCTION

▲ **Thomas McQueen Co.,** Forest Park, Ill. Low Bidder. $1,658,318. Grade separation between Canal and Des Plaines Sts.***Allied Structural Steel Co., 20 N. Wacker Dr., Chicago, Ill., $1,180,286 steel for same ***Standard Paving Co., 20 N. LaSalle St., Chicago, Ill., $234,640. Fifth Avenue Grade Separation, all Congress Expressway, CHICAGO, ILL. Cook Co., County Bldg., Chicago 2, Ill. CD 11/3/49

Michael Pontarelli, 4248 N. Kilpatrick St., Chicago 41, Ill. Low Bidder. $956,000. Contr. 1 Ainslee Street System Sewers, CHICAGO, ILL. City, City Hall, Chicago, 2, Ill. Bids Mar. 30.

Louis Scully & Sons, 6127 N. Hiawatha St., Chicago 30, Ill. Low Bidder, **$539,329**, auxiliary south side sewer E-1, LaSalle St. from W. 63 to Garfield Blvd., CHICAGO, ILL. City, City Hall, Chicago 2, Ill. Bids Mar. 26. CD 3/31.

▲ **S. A. Healy Co.**, 5569 S. Chicago Ave., Chicago 37, Ill. Low Bidder. **$1,024,409**. Sewers Congress Superhighway 9 Ave. to Des Plaines St., CHICAGO, ILL. Cook Co. County Bldg., Chicago 2, Ill.

Standard Paving Co., 20 N. LaSalle St., Chicago, Ill. Low Bidder. **$234,640**. Local drives, between Hiawatha, Chicago and Lake Sts., Wilmette*****Midwest Landscaping Assocs.**, 3426 Little Church St., Skokie, Ill., **$79,841**, landscaping 5 mi. between Wilmette Ave. and Dindee Rd., both Edens Expressway*****Otto Damgard**, 27 Fir St., Spark Forest, Ill. **$86,290**, landscaping between Little Calumet River and Paxton Ave. about 2½ mi.*****Clauss Bros.**, 1837 N. Harlem Ave., Chicago, Ill., **$88,236** landscaping 2.1 mi. Indiana Harbor Belt R.R. to Little Calumet River, both Calumet Expressway, CHICAGO, ILL. Cook Co., County Bldg., Chicago, Ill. CD 11/3/49.

Arcole Midwest Corp., 3225 Main St., Skokie, Ill. Low Bidder. **$912,503**. Finger C of terminal bldg. O'Hare Field, CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids Apr. 12. CD 3/27.

LOW BIDDERS—BUILDINGS

John Felmley Co., Peoples Bank Bldg., Bloomington, Ill., Low Bidder, **$594,300**, general contract girls' DORMITORY ADDNS. at Illinois State Normal University, NORMAL, ILL. State, State Capitol, Springfield, Ill. Bids Apr. 16. CD 2/14/45.

CONTRACTS—HEAVY CONSTRUCTION

Public Constr. Co., 5305 Hohman Ave., Hammond, Ind. Contract Awarded. **$265,550**. 5,100 ft. intercepting sewers, HOBART, IND. City, Hobart, Ind. Bids Mar. 30. CD 2/16.

Louis Scully & Sons, 6127 N. Hiawatha Ave., Chicago 30, Ill. Contract Awarded. **$229,189**. Water lines, storm and sanitary sewers, in hospital group, near TINLEY PARK, ILL. State Mental Hospital, Harlem and 183 Sts., Tinley Park, Ill. Bids Feb. 13, awarded Apr. 6. CD 2/2, under Streets and Roads.

Universal Eng. Co., Medford, Wis., Contract Awarded, **$432,567**, Contr. 1, c.conc. 8,406 mi. Pittsville-Wisconsin Rapids Rd., S. T. Hys. 13 land 73, Wood Co. WISCONSIN. State Hy. Comn., Madison, Wisc. Bids Apr. 10. CD 4/16, under LB.

CONTRACTS—BUILDINGS

Peter Hansen & Son, 9505 S. Prospect St., Chicago, 2, Ill., Contract Awarded **$400,000**, superstructure 2 story, bsmnt., HIGH SCHOOL, CHICAGO, ILL. Lutheran High School Assoc., 77 W. Washington St., Chicago, 2, Ill. Albert F. Heino 7919 S. Ashland St., Chicago, 20, Ill., archt. Awarded 4/9.

Blaw-Knox Co., Chemical Plants Div., 321 Penn Ave., Pittsburgh Pa.: Contract Awarded. Soybean processing PLANT with 250 ton daily capacity, adjacent to Larrowe formula feed plant; **Jones & Hettelsater Constr. Co.**, 1911 Baltimore St., Kansas City, Mo., concrete six-silo soybean elevator with 1,500,000 bu. capacity, ROSSFORD, O. General Mills, Inc., General Mills Bldg., 400 2nd Ave., Minneapolis, Minn. Awarded Apr. 12. CD 12/26.

▲ **Sherry-Richards Co.**, 201 N. Wells St., Chicago 6, Ill. Contract Awarded. Approx. **$2,750,000**. 286 unit 21 story, 57x167 ft., APARTMENT, Sheridan Rd. and Briar St., Chicago, ILL. John Mack, c/o Shaw, Metz & Dolio, archts., 208 S. LaSalle St., Chicago 4, Ill. CD 2/21.

Ragnar Benson Inc., 4744 W. Rice St., Chicago 51, Ill. Contract Awarded. **$100,000**. FACTORY addn., CHICAGO, ILL. Morton Mvg. Co., 5121 W. Lake St., Chicago 4, Ill. Victor Charn, 4744 W. Rice St., Chicago 51, Ill., archt. Awarded Apr. 9.

Hubschman Constr. Co., 402 W. Division St., Chicago 51, Ill. Contract Awarded. **$200,000**. 2 story, FACTORY addn., CHICAGO, ILL. School Mfg. Co., Tiessee) 235 W. Schiller St., Chicago 10, Ill. Sullivan & Hillman, 343 S. Dearborn St., Chicago 4, Ill., engrs. Awarded Apr. 11.

▲ **Green & Gust Co.**, 1154 Lunt Ave., Chicago 26, Ill. Contract Awarded. **$1,150,000**. Steel, brick, stone HIGH SCHOOL, CRYSTAL LAKE, ILL. School Dist. 155, Crystal Lake Bd. Educ., 255 Crystal Lake Ave., Crystal Lake, Ill. Bids Mar. 26, awarded Apr. 3. CD 4/12, under LB.

H. B. Barnard Co., 38 S. Dearborn St., Chicago 3, Ill. Contract Awarded. **$300,000**. DORMITORY, EVANSTON, ILL. Presbyterian Home, 3200 Grant St., Evanston, Ill. Pucker & Jenkins, 400 N. Michigan St., Chicago, Zone 11, archts. Awarded Apr. 3.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
STREETS AND ROADS
May 1—Iowa

† **Missouri**—B.A. 5/1—U. S. Eng., 601 Davidson Bldg., Kansas City, Mo., emergency repair to levee on Grand River vicinity of Brunswick, CIVENG 23-028-51-116. CD 7/19/46.

† **Texas**—B. A. 5/1—U. S. Eng., 1227 Texas and Pacific Bldg., Fort Worth, (U. S. Soil Conservation Service-sponsors). construct 5 earthen flood detention dams, above Lavon Damb Proj. **$715,000**. CD 6/9/44.

† **Montana**—B. A. 5/2—Bureau Reclamation, Dpt. Interior, Bldg. 1A, Denver Federal Center, Denver, Colo., clearing 53 acres of Areas 3 and 4 of Canyon Ferry Reservoir, Missouri River Basin Proj. Spec. 604C-22, L. N. McClellan, Bldg. 1A, Denver Federal Center, Denver, Colo., ch. engr. CD 5/25/44 under Earthwork.

Tex., Sweetwater—TERMINAL-HANGAR—B. A. 5/3—City, Sweetwater, reconstruction terminal-hangar. $65,000.

Minn., Baudette—B. A. 5/8—Lake of the Woods Co., F. G. Haag, aud., grading 7.5 mi. between County Aid Road 48, 6 mi. north of Williams to 13.5 mi. north, 143,995 cu. yd. excav., S. P. 39-501-01 (SAR 2), Minn. Proj. S 386 (2), $60,000. Plans deposit $1.25, E. G. Swenson, co. hg. engr. CD 3/15/45.

Minn., Fergus Falls—B. A. 5/8—Otter Tail Co., W. Lincoln, aud., grav. surf. 6.9 mi. between 8.75 mi. north of New York Mills, 3.5 mi. south, 2.25 mi. east of Hillview, S. P. 56-517-04 (SAR 1), Minn. Proj. S 245 (5); grade, timber box culverts, grav. surf. 5.8 mi. between Bluffton, 5.5 mi. north, one 60x36x32 ft. timber box culvert, one 72x72x36 ft. timber box culvert, S. P. 56-519-01 (SAR 19), Minn. Proj. S 433 (1). Plans deposit $1.80 each, W. P. Huber, co. hy. engr.

Minn., Walker—B. A. 5/9—Cass Co., L. C. Peterson, aud., grav. 4.3 mi. between T. H. 210, 0.5 mi. north of Pillager and CAR 22, S. P. 11-508-01 (SAR 1), Minn. Proj. S 445 (1). Plans deposit $1.25; grav. 5.7 mi. between SAR 1, north of Stonybrook and 0.2 mi. east of Cass-Crow Wing Co. Line, S. P. 11-509-01 (SAR 17), and S. P. 18-505-01 (SAR 4), Minn. Proj. S 567 (1). Plans deposit $1.60; grav. base, mixed prime bit. surf. 4.8 mi. between 5 mi. east of T. H. 371 and 9.8 mi. east of T. H. 371 in Hackensack, S. P. 11-507-02 (SAR 5), Minn. Proj. S 141 (3). Plans deposit 50c. $80,000. Donald **Cole, co. hy. engr.**

BIDS ASKED—BUILDINGS

† **Tex., Marathon**—UTILITY BLDG.—B.A. 5/8—Dpt. Interior, National Park Service, Region 3, Santa Fe, N. M., utility bldg., power house. $90,000. Extended date. CD 3/28.

Tex., Nacogdoches—FINE ARTS-AUDITORIUM—B.A. 5/2—State Teachers College of Texas (Stephen F. Austin) Nacogdoches, Tex. fine arts-auditorium. $375,000. Plans deposit $75. Bid date changed. Shirley S mons & Sons, Broadway at 6 St., Tyler, archts. CD 4/4.

Tex., Houston—SCHOOL—B. A. 5/9—Houston Independent School Dist., 1600 Washington St., masonry Burrus (Negro) School addn., $350,000. Plans deposit $25. Milton McGinty, 2425 Ralph St., archt. CD 6/29.

S. D., Pierre—NURSES HOME, etc.—B.A. 5/10—St. Marys Hospital, Pierre, nurses home, boiler plant and laundry. $400,000. J. Dixon, Mitchell, engr. archt. CD 11/23/49.

▲ **Tex., McAllen**—HOUSING—B.A. 5/10—McAllen Housing Auth., McAllen, 140 housing units for total 51 one and two story bldgs., concrete slab fdn., brick, haydite cavity exterior walls, constr. Tex. 28-1. $1,110,000. Plans deposit $50. Boese & Harkrider, Texas and Pacific Bldg., Fort Worth, archts. Zeb Rike, Nelson Bldg., assoc. archt. CD 10/24/49.

† **N. M., Alburqueque**—ADMINISTRATION—B. A. About 5/16—U. S. Eng., P. O. Box 1538, service administration bldg. (P-51-2), Sandia Base, Serial No. Eng. 29-005-51-40. Plans deposit $25.

Tex., Midland—BANK and OFFICE—Bids Asked—Midland National Bank, Main and Wall Sts., 2 story bank and office. $490,000. CD 3/5.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **Allis-Chalmers Mfg. Co.**, 1127 S. 70 St., Milwaukee, Wis. Low Bidder, **$2,864,740**, hydraulic turbines for Fort Randall Reservoir Proj. Inv. 92, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids Apr. 5. CD 1/25.

Jahncke Service, Inc., 814 Howard Ave., New Orleans 4, La. Low Bidder, **$875,429**. 2.108 mi. hydraulic embankment Hy. U. S. 90, Proj. F 1091 (2) and FI 1091 (3), Orange Co. TEXAS. State Hy. Comn., Austin, Tex., Bids April 17. CD 3/28.

U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex., cancelled bids to have been opened April 10, dredging Anahuac Channel in Chambers Co. Inv. No. CIVENG 421-243-51-85. TEXAS. U. S. Eng., 606 Santa Fe Bldg., Galveston, Tex. CD 4/3.

▲ **Gaylord Constr. Co.**, 806 Blodgett St., Houston, Tex. Low Bidder, **$91,934**. est. $60,000. asph. leveling course 23,934 mi. Hy US 67 and 84, Proj. C 54-6, 8 and 9-14, 7 and 7, Brown and Mills Counties*****M. B. Killian & Co. Inc.** and **Killian House Co.**, P. O. Box 1981, San Antonio, Tex., **$589,695**. est. $200,000, grading, structures, pavement 0.308 mi. Hy US. 81, Proj. UI 1089 (12). Bexar Co.*****W. S. Crawford Co.**, 5350 Montrose Dr., Dallas and **Joe Davidson**, P. O. Box 439, Terrell, Tex., **$111,579**. est. $80,000.

grading, structures, base and surf. 10.703 mi. Hy FM 1536 and 1533, Proj. V 1465-1-1, Delta Co.*** **Austin Road Co.**, P. O. 1590, Dallas, Tex., **$322,503**. est. $300,000. grading, structures, c. conc. pavement 0.391 mi. Hy US, 75 Proj. FI 466, (23), Galveston Co.*****H. B. Zachary Co.**, P. O. Box 2570, San Antonio, Tex., **$633,932**. est. $200,000.

grading, structures, base and surf. 7.816 mi. Hy US 287, Proj. F. 449 (3), Clay Co.*****Uvalde Const. Co.**, P. O. Box 3027, Dallas, Tex., **$234,665**. est. $200,000. base and surf. 15,526 mi. Hy. FM 636, 1129 and 1603, Proj. S 570 (4), etc., Navarro Co. TEXAS. State Hy. Comn., Austin, Tex. Bids April 17. CD 3/28 and 4/2.

▲† **Peter Kiewit Sons' Co.**, 1024 Omaha Natl. Bank Bldg., Omaha, Neb. Low Bidder, **$1,294,707**, est. $1,157,160, constr. Willow Creek Dam, Colorado-Big Thompson Proj., Spec. DC-3343, COLORADO. Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo. Bids Apr. 10. CD 3/8.

LOW BIDDERS—BUILDINGS

Bd. Educ., S. S. Vohs, clk., Ceylon, Minn. rejected bids Apr. 10, 2 story school addn., 30x100 ft. classroom wing, 96x100 ft. auditorium, CEYLON, MINN. **$300,000**. Will re-advertise. CD 3/21.

▲ **D'Arcy Leck Constr. Co.**, 2838 Stevens Ave., Minneapolis, Minn. Low Bidder. **$1,043,361**. general constr. 3 story, ground floor, 62x242 ft. CLASSROOM BLDG., 24x122 ft., bsmnt. GYMNASIUM connected by tunnel, College of Education, MINNEAPOLIS, MINN. University of Minnesota, R. S. Callaway, purch. agt., 323 Admin. Bldg., Minneapolis 14, Minn. Bids Apr. 4. CD 3/21.

Potter Co., Court House, Amarillo, Tex., rejected bids April 9, NURSES HOME addn. and remodeling, AMARILLO, TEX. CD 3/27.

Hester Constr. Co., Lubbock, Tex., Low Bidder, **$85,760**. est. $110,000. service SHOP and WAREHOUSE, in city Park, LUBBOCK, TEX. City, Lubbock, Tex. Bids April 12. CD 3/30.

† **The Holloway Co.**, Box 84, Albuquerque, N. M., Low Bidder **$92,225**, 2 WAREHOUSES; **$115,153**, 2 SHOPS, Serial No. ENG 29-005-51-26, ALBUQUERQUE, N. M. U. S. Eng., 2132 E. Central Ave., Albuquerque, N. M., Bids April 12. CD 4/2.

CONTRACTS—HEAVY CONSTRUCTION

Lysne Constr. Co., Blooming Prairie, Minn. Contract Awarded. **$94,456**. 9,234 sq. yd. 9-7-9 c. conc. paving, 15,389 sq. yd. 7-5-7 c. conc. paving, integral curb, etc., ALBERT LEA, MINN. City, W. C. Hyde, mgr., Albert Lea, Minn. Bids Apr. 9. CD 4/4.

Reno Constr. Co., Overland Park, Kan. Contract Awarded. **$166,394**. 24 ft. b. conc. surf. 4.052 mi. Platte Co., MISSOURI. State Hy. Dpt., Jefferson City, Mo. Awarded Mar. 17. Bids 3/2 rejected. CD 3/7, under LB.

Urban Development Corp., subsidiary of Forrest Lumber Co., 1300 Fourth St. Lubbock, Tex., Purchase and Hire. **$57,500**. WW, LUBBOCK, TEX.

Urban Development Corp., subsidiary of Forrest Lumber Co., 1300 Fourth St., Lubbock Tex. Purchase and Hire. **$47,000**. area earthwork, drainage, grading, LUBBOCK, TEX.

Urban Development Corp., subsidiary of Forrest Lumber Co., 1300 Fourth St., Lubbock, Tex. Purchase and Hire. $71,000. street constr. and asph. paving, LUBBOCK, TEX.

Tex-Harvey Pipe Line Co, Midland, Tex. Own forces. **$479,000**. 56 mi. 12, 8 and 6 in. trunk pipe lines, crude oil, Midland, TEXAS. CD 3/28.

Wm. G. Farrington Co. 1719 Sunset St., Houston, Tex. Own forces. **$53,300**. c.i. water lines, facilities, HOUSTON, Tex.

Wm. G. Farrington Co., 1719 Sunset St., Houston, Tex. Own forces. **$62,500**. storm sewers; Approx. $60,000. sanitary sewers. HOUSTON, TEX. CD 4/11.

Wm. G. Farrington Co., 1719 Sunset St., Houston, Tex. Own forces. $70,175. street const. asph. type paving. HOUSTON, TEX.

City, Pear Ridge, Tex. Purchase and Hire. $62,500. inverted penetration type street paving, PEAR RIDGE, TEX. CD 11/20.

CONTRACTS—BUILDINGS

▲ **W. D. Giertsen Co.**, 900 Glenwood Ave., Minneapolis, Minn. Contract Awarded. **$1,289,032**. general constr. 2 story HIGH SCHOOL, EXCELSIOR, MINN. Bd. Educ., Minnetonka School Dist. 7, W. O. Nilsen, supt., Excelsior, Minn. CD 3/23, under LB.

Armco Drainage & Metal Products, Inc., 3500 Maury St., Houston, Tex. Separate Contracts, Approx. $150,000. PLANT addn. HOUSTON, TEX. CD 3/16.

Estes & Hicks, c/o Eastwood Oaks, Houston, Tex. Own Forces. $325,000. HOUSING, HOUSTON, TEX. CD 3/28.

▲ **Procon, Inc., c/o Universal Oil Products Co.**, engrs. 310 S. Michigan St., Chicago, Ill. Contract Awarded, Approx. **$12,000,000**. REFINERY expans. on LaPorte Rd. mfg. chemical elements used in mfg. of aviation gasoline and jet fuels HOUSTON, TEX. Shell Oil Co., Shell Bldg., Houston, Tex. CD 10/17/48.

Cadenhead Constr. Co., Longview, Tex. Contract Awarded. **$500,000** first unit of HOUSING, LONGVIEW, TEX. Cadenhead Constr. Co. and Subdivision Developers, Inc., Longview, Tex. CD 4/11.

G. D. Porter Constr. Co., Box 661, Midland, Tex., Contract Awarded, **$86,678**, news agency WAREHOUSE, MIDLAND, TEX. Earl A. Johnson, 110 N. West Frost Ave., Midland, Tex. J. J. Black, 801 W. Kansas Ave., Midland, Tex., archt.

▲ **R. F. Ball Constr. Co.**, Box 13097, Houston, Tex., Contract Awarded, **$1,777,000**. general constr. HIGH - SCHOOL, SNYDER, TEX. Snyder (Consolidated) Independent School Dist., Snyder, Tex. Bids April 12. Awarded April 16. CD 4/18. under LB.

OFFICIAL PROPOSALS

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
May 9—California
May 10—California
STREETS AND ROADS
May 9—California

† **California**—B.A. 5/1—Bureau of Public Roads, Dpt. Commerce, 180 New Montgomery St., San Francisco, Zone 5.

San Bernardino Co.—road constr. 5.224 mi. Calif. F. H. 68-D1, E2, F1, G1, H1, Mill Creek. CD 8/24/44.

Calif., Los Angeles—B.A. 5/7—Los Angeles Dpt. Water & Power, 207 S. Broadway, enlargement of 5,000 ft. 30-in. steel pipe, Westgate Trunk Line, $200,000. S. B. Morris, engr. CD 2/15/45.

Calif., Firebaugh—B.A. 5/8—City, City Hall, constr. sewage pumping pit for city. Plans deposit $10. J. A. Ross, 421 Rowell Bldg., Fresno, city engr.

BIDS ASKED—BUILDINGS

Ore., Portland—STORE—B.A. 5/8—J. J. Newberry Co., Existing Bldg., remodel, enlarge storage. Extended date. Glen Stanton, Concord Bldg., archt. CD 4/18.

† **Arizona**—OPERATORS' HOUSE, etc.—B.A. 5/2—Bureau Reclamation, Dpt. Interior, Phoenix, Ariz., one 3-bedroom operator's house, sewage disposal and domestic water systems and fencing at Tucson Substation Davis Dam Proj., Spec. 300C-20. L. N. McClellan, Bldg. 1-A Denver Federal Center, Denver, Colo., ch. engr.

Calif., San Francisco—FIRE HOUSE—B.A. 5/9—Dpt. P. Wks., City Hall, San Francisco. Park Merced Fire House. Plans deposit $50. CD 2/5/45.

LOW BIDDERS—HEAVY CONSTRUCTION

▲† **Newport News Shipbuilding & Dry Dock Co., Newport News, Va.** Low Bidder. $1,629,625, three 74,000 hp. hydraulic turbines for Folsom Power Plant Central Valley Proj., Spec. DS-3144, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Bldg. 1-A, Denver Federal Center, Denver, Colo. Bids Apr. 12. CD 3/12.

▲ **Lee J. Immel**, P. O. Box 175, San Pablo, Calif., Low Bidder, $105,423. Plant mix surf. on 2.4 mi. portions of Eastshore Hys., between Ashby Ave. and El Cerrito Overhead near Berkeley, Alameda Co.; **Chas L. Harney, Inc.**, 575 Berry St., San Francisco, Calif. Low Bidder, $1,446,641. Grading, grade separation structures 1.3 mi. between Army and 17 Sts., San Francisco Co., CALIFORNIA. State Div. Hys., P. Wks. Bldg., Sacramento, Calif. Bids Apr. 11. CD 3/19.

CONTRACTS—HEAVY CONSTRUCTION

▲† **Guy F. Atkinson Co. and Ostrander Constr. Co.**, Cascade Bldg., Portland, Ore. and **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C. (McNary Dam Contractors). Contract Awarded, $58,416,491. Completion of McNary Dam. CIVENG 45-164-51-40, Umatilla Co., OREGON-WASHINGTON. U. S. Eng., 19 E. Poplar St., Walla Walla, Wash. Bids April 12. Awarded April 16. CD 4/16, under LB.

▲ **Dan Caputo & Edw. Keeble**, 2711 Moorpark Ave., San Jose, Calif. Contract Awarded, $1,030,129, impr. 12 St. Dam and adjacent streets, traffic separation etc., OAKLAND, CALIF., City, City Hall, Oakland, Calif. Bids Apr. 3, awarded Apr. 11. CD 4/17, under LB.

CONTRACTS—BUILDINGS

▲ **Barrett & Hilp**, 918 Harrison St., San Francisco, Calif. Contract Awarded, $2,000,000, 1 story, 160,000 sq. ft. steel, concrete WAREHOUSE, San Mateo Ave., SOUTH SAN FRANSISCO, CALIF. General Warehouse Co., 1 Drumm St., San Francisco, Calif. Ward & Bolles, 215 Leidesdorff St., San Francisco, Calif., archts. Awarded Apr. 13.

▲ **Parker, Steffens & Pearce**, 135 South Park St., San Francisco, Calif. Contract Awarded, $1,378,300. San Carlos-Belmont High SCHOOL on Alameda de las Pulgas, REDWOOD CITY, CALIF. Sequoia Union High School Dist., Sequoia High School, Redwood City, C. C. Bids Apr. 4, awarded Apr. 13. CD 4/11, under LB.

ALASKA

BIDS ASKED—HEAVY CONSTRUCTION

▲† **E. V. Lane Co.**, Box 417, Palo Alto, Calif. Contract Awarded, approx. $1,900,000, oil line installation and unloading facilities, FORT RICHARDSON, ALASKA. U. S. Eng., (APO 942, c/o PM, Seattle, Wash.) Anchorage, Alaska. CD 3/13.

U. S. POSSESSIONS

BIDS ASKED—HEAVY CONSTRUCTION

▲ **Zequeira & Pitiero, Inc.**, San Juan, Puerto Rico. Contract Awarded, $1,298,600. construct runway and taxiway at the Isla Verde International Airport, PUERTO RICO. Puerto Rico Transportation Auth., San Juan, Puerto Rico. Bids Mar. 8, awarded Apr. 6. CD 3/19, under LB.

Bids: May 9, 1951

State Road Work

Sealed proposals will be received by the State Highway Department at its offices in Dover, Delaware, until 1:00 P.M., E.S.T., May 9, 1951, and at that time and place publicly opened for a contract involving the following approximate quantities:

Contract 924
BROWNS CHURCH TO JACOBS SCHOOL
Sussex County
24' Bituminous Concrete Roadway
2.374 Miles

37,000 C. Y. Excavation
150 C. Y. Structure Excavation
2,000 C. Y. Borrow
300 C. Y. Borrow Pit Stripping
16,000 C. Y. Selected Borrow
40,000 S. Y. Waterbound Macadam
7,500 T. Hot-Mix Asphalt Surface
150 S. Y. Patching
40 C. Y. Cement Concrete Masonry
170 S. Y. Waterproofing
6,000 Lbs. Reinforcing Steel
410 L. F. 12" R. C. Pipe
280 L. F. 15" R. C. Pipe
240 L. F. 18" R. C. Pipe
110 L. F. 24" R. C. Pipe
350 L. F. C. C. Parkway Curb
5 Each Catch Basins Type PW
1 Each Catch Basin Type PW-1
2 Each Catch Basins Type PW-2
2,750 Lbs. Castings
70,500 S. Y. Topsoil
15 A. Seeding
14,000 S. Y. Sodding
800 Gal. R. C. 3 Asphalt
800 Gal. R. C. 3 Asphalt
35 T. Crushed Chips
35 T. Slag Chips
700 S. Y. Removal Present Pavement
200 L. F. Ditching

The Employment Agency for this Contract shall be the Delaware State Employment Service, Wagstaff Building, The Circle, Georgetown, Delaware.

Attention is called to the Special Provisions in the proposal, specifications and contract agreement.

Performance of contract shall commence within ten (10) days after execution of the contract and be completed as specified.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by surety bond, certified check, or money to the amount of at least ten (10) per centum of the total amount of the proposal.

The envelope containing the proposal must be marked "Proposal for the construction of State Highway Contract No. ....."

The Contract will be awarded or rejected within twenty (20) days from the date of opening proposals.

The right is reserved to reject any or all bids.

Complete sets of plans and specifications may be obtained after April 20, 1951, upon receipt of five dollars ($5.00) for each set, which amount will not be refunded.

Make checks payable to the State Highway Department.

STATE HIGHWAY DEPARTMENT
By: J. Gordon Smith,
Chairman
R. A. Haber, Acting Chief Engineer
Dover, Delaware
April 11, 1951

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3387) will be received by Bureau of Reclamation, Huron, South Dakota, until May 17, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of Rapid City-Wall-Midland 115-kilovolt transmission line, Missouri River Basin Project. The work is situated between Rapid City and Midland, South Dakota. The line will be 115,000-volt, 3-phase, single-circuit, wood-pole, H-frame type, approximately 109 mi. long, with 2 overhead ground wires strung the entire length; and other work. Desired time for completion is 260 days. For particulars, address Bureau of Reclamation, Huron, South Dakota; or Building 1-A, Denver Federal Center, Denver, Colorado.

U. S. Government

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3390) will be received by Bureau of Reclamation, Lindsay, California, until May 22, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of Traunger Pumping Plant and High Level Distribution Reservoir, Lindsay Strathmore Irrigation District, Central Valley Project, California. The work is situated approximately 1½ miles east of Lindsay, California. Principal items are approximately: 36,000 cu. yds., excavation for pumping plant and reservoir; 2,000 cu. yds., concrete in pumping plant and reservoir; furnishing and installing structural steel framing for pumping plant; installing 175,000 lbs. of distribution piping; installing 102,000 lbs. of pumping units; furnishing and installing miscellaneous items of equipment such as heating and ventilating system, water treatment equipment, gates and valves, pipes, valves, fittings, etc.; and other work. Time allowed for completion will be 360 days. For particulars, address Bureau of Reclamation, Lindsay, California; or Building 1-A, Denver Federal Center, Denver, Colorado.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids, Invitation No. DS-3386) will be received by the Bureau of Reclamation, Denver, Colorado, until May 24, 1951, and then publicly opened for furnishing one vertical-shaft, 360-rpm pump turbine with a pumping capacity of 370 cfs under a head of 240 ft.; and one 13,000-hp., unity power factor, 360-rpm, 13,000-volt, 3-phase, 60-cycle, vertical shaft synchronous motor for Flatiron Power and Pumping Plant, Colorado-Big Thompson Project, Colorado. Delivery is desired within 540 days. For particulars, address Bureau of Reclamation, Building 1-A, Denver Federal Center, Denver, Colorado.

Department of Commerce, Bureau of Public Roads, April 16, 1951. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 A.M., E.S.T., May 18, 1951, for Project 1E3, Baltimore-Washington Parkway, Prince Georges County, Maryland. Reinforced Concrete Structure with Stone Facing over East-West Highway and Approaches. Length 0.152 mile. The approximate quantities of the more important items are as follows: 52,500 cu. yd. Excavation, 1,912 cu. yd. Cement Concrete, 310,700 lb. Reinforcing Steel and 191 cu. yd. Stone Masonry. Minimum wage rates have been fixed as required by law. For plans and specifications, a deposit of $10.00 cash or CERTIFIED check made payable to the Treasurer of the United States, will be required to insure their return within 15 days after the opening of bids. Plans, specifications and proposal forms may be obtained at the address given above. H. J. Spelman, Division Engineer.

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-3385) will be received by Bureau of Reclamation, Elephant Butte, New Mexico, until May 15, 1951, and then publicly opened for furnishing labor and materials and performing all work for the construction of Belen and Willard substations, Rio Grande Project, New Mexico-Texas. The work is situated near Belen and Willard, New Mexico. Principal items are approximately: grading 800 cu. yds.; installing one power transformer and 120,000 lbs. other electrical equipment; furnishing and installing 32,000 lbs. of steel structures; 7,000 lbs. electrical materials, and 5,000 lin. ft. of conductor; furnishing and erecting 2 prefabricated service buildings; and other work. The work is divided into 2 schedules. Time allowed for completion will be 345 days. For particulars, address Bureau of Reclamation, Elephant Butte, New Mexico; or Building 1-A, Denver Federal Center, Denver, Colorado.

(Continued on page 119)

OFFICIAL PROPOSALS

RATE: THE RATE FOR OFFICIAL PROPOSAL ADVERTISING IS $1.25 PER LINE (OR FRACTION) PER INSERTION.

COPY RECEIVED UP TO 3:00 P. M. THURSDAY FOR ISSUE OUT FOLLOWING THURSDAY SUBJECT TO SPACE OPEN FOR LAST MINUTE ADS

SEND COPY TO OFFICIAL PROPOSAL DIVISION, ENGINEERING NEWS-RECORD, 330 W. 42ND ST., NEW YORK 18, N. Y.

Bids: May 1, 1951

THE HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO

SIR ADAM BECK-NIAGARA GENERATING STATION NO. 2
TENDERS FOR CONSTRUCTION OF HYDRAULIC TUNNEL

Sealed tenders, in duplicate, addressed to the undersigned and clearly marked "Tender for Hydraulic Tunnel, Section No. ——, Sir Adam Beck-Niagara Generating Station No. 2" will be received up to 4 p. m. Eastern Standard Time

Tuesday, May 1st, 1951

for the construction of any or all of the four Sections of Hydraulic Tunnel, each approximately 6,225 feet in length, of circular cross-section, concrete-lined, with 45 feet finished diameter. The principal features of the work to be performed in each Section comprise:—one work shaft, excavation of tunnel, installation of structural steel support, construction of concrete lining reinforced where required, grouting of rock and behind concrete lining wherever necessary, and dewatering of the work.

Copies of Form of Agreement, Information for and Instructions to Tenderers, General Conditions and Specification, Plans, Form of Tender and Labour Agreement may be obtained on or after March 30th, 1951 from the Director of Supply, 620 University Avenue, Toronto, Ontario, upon payment of a deposit in the amount of $1,000.00 per set, which amount will be refunded upon submission of a tender accompanied by the required security. If no such tender is submitted but the documents are returned in good order $750.00 of the said deposit will be returned. Failing return of the documents in good order the Commission will retain the full amount of the deposit.

Each tender for each Section of the Hydraulic Tunnel must be accompanied by a certified cheque on a Canadian Chartered Bank for the sum of Five Hundred Thousand Dollars ($500,000.00) payable to the order of the Commission. The Tenderer to whom a contract is awarded shall be required to provide a performance bond satisfactory to the Commission for fifty per cent (50%) of its tender price. Each certified cheque, furnished by each Tenderer, will be retained by the Commission until the contract for the Section to which it applies has been executed and the required performance bond has been furnished. As soon as possible thereafter, the certified cheques of the unsuccessful tenderers will be returned. If a Tenderer after being awarded a contract for a Section, refuses to execute the contract or fails to furnish the required performance bond, Two Hundred and Fifty Thousand Dollars ($250,000.00) of the proceeds of the certified cheque of such Tenderer shall be forfeited to the Commission as ascertained and liquidated damages and the balance returned. If a successful tenderer fulfills the obligations as to executing a contract and furnishing a performance bond, its certified cheque will be returned.

The lowest or any tender will not necessarily be accepted.

Robert H. Saunders, C.B.E., K.C.,
Chairman, and Members of The Hydro-Electric Power Commission of Ontario,
620 University Avenue,
TORONTO 2, Ontario.

Bids: May 9, 1951

Nurses' Home

ONONDAGA COUNTY HOME
Onondaga Hill, New York

SEALED PROPOSALS will be received until 2:00 P.M., E.D.T., May 9, 1951, by Robert W. Sollinger, County Purchasing Agent, in Room 107 at the Onondaga County Court House, Syracuse, New York, at which time and place they will be publicly opened and read aloud, for the construction of the above project.

Sealed Proposals shall be received for the following divisions of the work:

Contract No. 1—General Construction
Contract No. 2—Plumbing and Sanitary System
Contract No. 3—Heating and Ventilating
Contract No. 4—Electric Wiring System
Contract No. 5—Elevators, and Elevator Fronts and Doors

The Instructions to Bidders, Forms of Proposal, Form of Contract, Drawings and Specifications may be examined in the office of the County Purchasing Agent and at the Office of the Architects, Vedder and Curtin, A.I.A., 527 South Warren Street, Syracuse, New York. The above Documents shall also be on file for examination by prospective Bidders, Sub-Contractors and Materialmen, as follows:

Syracuse Builders' Exchange, Durston Bldg., Syracuse, N. Y.
Rochester Builders' Exchange, Rochester, N. Y.
Albany Builders' Exchange, Albany, N. Y.
Buffalo Builders' Exchange, Buffalo, N. Y.
Brown's Letters, 101 Park Avenue, New York City
Dodge Reports, 110 West 40th St., New York City
Dodge Reports, 361 Delaware Avenue, Buffalo, N. Y.

Sets of the above Documents are obtainable from the County Purchasing Agent by depositing $50.00 for each set. Those who submit a Sealed Proposal for Prime Contracts to the County of Onondaga for this Project will be refunded their deposits in full if the Documents are returned in good condition on or before May 14, 1951. Others who receive the above Documents will be refunded one half of their deposits if the Documents are returned in good condition on or before May 14, 1951.

The right is reserved to reject any and all bids.

Robert W. Sollinger
Onondaga County
Purchasing Agent

April 4, 1951
Syracuse, New York

COMMONWEALTH OF MASSACHUSETTS. Department of Public Works. NOTICE TO CONTRACTORS: BOSTON CENTRAL ARTERY (Embankment Road Connection). Separate sealed proposals for the Substructure and Approaches (Contract E-1), the Steel Superstructure (Contract E-2), and Deck, Electrical Work and Snow Melting System (Contract E-3), for a single and double deck elevated highway structure, will be received at Room 427, 100 Nashua Street, Boston, Mass., until 12 o'clock noon (DST) of Tuesday, May 15, 1951 and at that place and time publicly opened and read. Charge for one set of plans (applicable to all three contracts) and proposal form for one contract: $50.00, amount returnable only to bidders who return plans in good condition within three days after opening of bids. Additional proposal forms for any one of the contracts may be had upon payment of $5.00 for each proposal, which amount will be refunded if such proposal is used for the purpose of submitting a formal bid. Proposal guaranty: $30,000 for Contract E-1; $75,000 for Contract E-2; $13,000 for Contract E-3. Minimum wage rates have been established. Complete information at office of Department. Right reserved to waive any informality in or reject any any or all proposals. An award will not be made to a Contractor who is not equipped to undertake and complete the work.

By: WILLIAM F. CALLAHAN
Commissioner of Public Works.

April 14, 1951.

Bids: May 15, 1951

Airlines Terminal & Parking Garage

TRIBOROUGH BRIDGE AND TUNNEL AUTHORITY

SEALED BIDS WILL BE RECEIVED BY the Triborough Bridge and Tunnel Authority's Administration Building, Randall's Island, New York 35, N. Y., as follows:

Until 11:00 a.m. daylight saving time, on TUESDAY, MAY 15, 1951

For the construction of East Side Airlines Terminal and Public Parking Garage located 37th to 38th Streets and First Avenue, Borough of Manhattan.

Deposit required for specifications, etc., $75 for each set.

The information for bidders, form of contractor's bid, form of contract, the specifications, the plans and the forms of performance and labor and material bonds may be examined at the office of the Architect, John B. Peterkin, 36 West 44 Street, New York, N. Y. and copies thereof may be obtained upon deposit for each set, of the amount hereinabove specified, to be refunded upon return of the plans and documents in good condition within 30 days after the opening of bids.

Bids: May 16, 1951

Supervisory Control System

THE PORT OF NEW YORK AUTHORITY
GEORGE WASHINGTON BRIDGE
WEST 178TH STREET AND WEST 179TH STREET TUNNELS
CONTRACT GWB-120.019

Sealed proposals for furnishing and installing a supervisory control system for the West 178th Street and West 179th Street Tunnels, New York City, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 8th Ave., New York 11, until 2 P.M., Wednesday, May 16, 1951, and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M., on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be remitted if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman.

New York, April 26, 1951

Bids: May 23, 1951

Sewage Treatment Plant

Sealed bids will be received by the Palisades Interstate Park Commission until 3:00 P.M., E. D. S. T., May 23, 1951, for the construction of a sewage treatment plant for 10,000 population and a 200,000 gallon concrete reservoir in the Anthony Wayne Area (Queensboro), Harriman State Park, Orange County, New York.

Full information, plans, specifications and proposals may be secured at Administration Headquarters, Palisades Interstate Park Commission, Bear Mountain, N. Y. Payment for plans is Five Dollars ($5.00).

THE COMMISSION RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS RECEIVED.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT: BUSINESS: **"OPPORTUNITIES"** :EQUIPMENT :USED OR RESALE

UNDISPLAYED RATE

$1.50 a Line, minimum 4 lines. To figure advance payment count 5 average words as a line.
EMPLOYMENT WANTED and Individual Selling Opportunity undisplayed rate is one half of above rate, payable in advance.
Box Numbers in care of our New York, Chicago and San Francisco Offices count as one additional line.
Replies are forwarded each day as received at each of the offices mentioned without additional charge.

Discount of 10% is allowed if full payment is made in advance for 4 consecutive insertions.
EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

DISPLAYED RATE

The advertising rate $14.25 per inch for all advertising appearing on other than a contract basis. Contract rate quoted on request.
An advertising inch is measured ⅞ inch vertically on one col., 3 col.—30 inches to a page. E.N.R.

New advertisements received by April 30th will appear in the May 10th issue.

MECHANICAL SUPERINTENDENTS — Thoroughly experienced in process piping and mechanical equipment erection, including stainless steel pressure and acid vessels, pumps, glass piping, etc.

INSTRUMENTATION SUPERINTENDENT — Experienced in repair and installation of all types of control, indicating and recording instruments.

PURCHASING AND EXPEDITING PERSONNEL — Must have plenty of experience handling requisitions and orders for mechanical equipment, piping, etc., and aggressiveness to trace and expedite and get the materials on the job.

Send outline of experience to Atlanta offices of:

JOHN J. HARTE COMPANY
284 Techwood Drive Atlanta, Georgia

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

CIVIL SERVICE

STRUCTURAL DESIGNER. Graduate Civil Engineer with at least five years experience in structural steel and reinforced concrete design. Experience on locks, dams and drainage structures desirable but not essential. Pleasant working and living conditions in city of 124,000 population. Salary open. Give full particulars, photo and references. Byron P. Lyons, Chief Engineer, Louisiana Department of Public Works, 11th Floor Capitol Building, Baton Rouge, Louisiana.

ENGINEERING AIDE—Wanted—Senior with experience in Municipal and Public Works Engineering—Civil Service—Examination to be held April 24, 1951. For Further information and application apply Wauwatosa Civil Service Commission, 7616 Hartwood Avenue, Room 206, Wauwatosa, Wisconsin.

CITY ENGINEER Wanted: Registered; by City of 7000 population. State qualifications, salary expected and full particulars in letter to City Clerk, Vernon L. Peterson, International Falls, Minnesota.

POSITIONS VACANT

WANTED: PIPING Draftsmen, structural engineers, industrial engineer. Murray Hill 3-7484, (N.Y.)

ESTIMATOR FOR Quantity takeoff and with knowledge of checking details for permanent position with old established building construction company located in Allentown, Pa. Good opportunity available if desired. State qualifications and approximate salary desired. H. E. Stoudt & Son, Inc., 1212 S. Fifth Street, Allentown, Pa.

ENGINEERS WANTED, experienced in surveys, design, preparation of plans and supervision of construction of Water Works or Sewage Treatment Plants. State qualifications, salary requirements, references, availability and Military Status. Work principally in Middle Atlantic and New England States. Write P-9471, Engineering News-Record.

DRAFTSMEN—STRUCTURAL Steel Detailers experienced only. Alliance Engineering Co., 82 W. Washington St., Chicago. CE-6-2819.

(Continued on page 122)

CIVIL ENGINEER

College degree with background in foundations, heavy construction methods, soil mechanics. Estimating, engineering layout, some drafting. Location New York City.

P-9556, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

CONSTRUCTION SUPERINTENDENT

Nationally known mechanical contractors. Need experienced superintendent for equipment and piping installation. Several locations soon available within continental United States. Please state experience.

P-9561, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SALES ENGINEER

Permanent position working with salesmen contacting consulting engineers, municipal engineers and contractors on Asbestos Cement Pipe Products. Travel three central states returning to Cleveland headquarters week-ends. Excellent opportunity for registered engineer about 30 years old with sales ability. Refer application to Transite Pipe Department.
JOHNS-MANVILLE SALES CORPORATION
45 Prospect Avenue, N.W. Cleveland 15, Ohio

SALARIED POSITIONS $3,500—$35,000

We offer the original personal employment service (established 41 years.) Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars.
R. W. BIXBY, Inc., 272 Dun Bldg., Buffalo 2, N.Y.

- PURKISS PERSONNEL is your best bet for construction positions, both foreign and domestic. Below are some samples of interesting current openings with major firms paying top rates.

OVERSEAS
WATERWORKS DESIGNER

AIRFIELDS
- PROJECT ENGINEERS
- ASST. PROJECT ENGINEERS
- GENERAL SUPTS., C.E.
- SUPTS. OF CONSTRUCTION
- SUPTS. OF PAVING, C.E.
- ARCHITECTURAL ENGINEERS
- ELECTRICAL ENGINEERS
- MECHANICAL ENGINEERS
- INSPECTORS
- SURVEYORS

In order for *us* to do our best for *you*, it would be helpful if you could come in for a personal interview; otherwise send two resumes, please.

PURKISS *Personnel*
225 West 34th St. (Room 1814)
CHickering 4-4084
Opposite Pennsylvania Station

CONSTRUCTION SUPERINTENDENT

Experienced in construction of Blast Furnaces. Must be a good organizer, able to handle labor and qualified to exercise executive ability. Compensation commensurate with ability of individual.

Write and furnish full information regarding education, training, chronological details of experience, age, salary expected, etc. All replies will be considered strictly confidential.

P-9382, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

DESIGNERS and DRAFTSMEN

Positions available with large New York firm of Contracting Engineers in the following departments:

ELECTRICAL
ARCHITECTURAL
STRUCTURAL

Reply by letter giving complete experience record, salary desired and date available. All replies will be treated as confidential. Our employees know of this advertisement. Reply to

P-9562, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

SANITARY ENGINEERS

Excellent opportunities for immediate permanent employment with a progressive organization. Experience essential in sanitary design, specification writing and report preparation for water and sewage treatment plants. Experience in valuation and rate studies helpful.

Desirable working conditions at salary commensurate with ability. Write for application blank. All replies will be held confidential and will be promptly acknowledged.

CAPITOL ENGINEERING CORPORATION
DILLSBURG, YORK COUNTY PENN.

Materials Engineer and Soils Engineer

For construction work in eastern section of the United States. Duration of work 6 to 8 months. Requirements: Materials Engineer—Field testing and control of materials of construction and concrete mix design. Soils Engineer—Soil surveys, identification testing (field and laboratory) compaction control and stabilization. In reply give brief resume of experience.

P-9537, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

BLAST FURNACE ENGINEER

Must have experience in Blast Furnace design and have ability to supervise the work of others. Excellent opportunity with salary open.

JOHN MOHR & SONS
3200 E. 96th Street Chicago 17, Ill.

CONSTRUCTION SUPERINTENDENT

Experienced in construction of Open Hearth Plants. Must be a good organizer, able to handle labor and qualified to exercise executive ability. Compensation commensurate with ability of individual.

Write and furnish full information regarding education, training, chronological details of experience, age, salary expected, etc. All replies will be considered strictly confidential.

P-9381, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

SANITARY ENGINEERS DESIGNERS DRAFTSMEN

Experienced men wanted by Consulting Engineers Office—State qualifications age experience salary and date available in first letter. Replies held strictly confidential.

P-9485, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

MECHANICAL ENGINEERS, DESIGNERS DRAFTSMEN for industrial plant equipment, chemical process piping, lay-out and detailing. STRUCTURAL ENGINEERS-DESIGNERS of steel, concrete structures in industrial work. CIVIL ENGINEER—DESIGNER experienced soil mechanics paving and drainage, pipe lines.

Send full particulars to:
JOHN J. HARTE CO.
284 Techwood Drive, Atlanta, Georgia

STRUCTURAL STEEL
DRAFTSMEN
DETAILERS AND CHECKERS
ONLY TOP RATE MEN
Write Qualifications
BERZIN, GEIST & LICHTENBERG
ENGINEERS
213 East 38 Street, New York 16, N. Y.

DESIGNERS, DRAFTSMEN, ELECTRICAL - MECHANICAL - STRUCTURAL. - JOB LOCATED IN MIDDLE WEST. EXCELLENT WORKING CONDITIONS. GOOD SALARY. OLD ESTABLISHED COMPANY.

P-9385, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

First Class SUP'T WANTED

On large flood control State contract in central N. J. Work involves cofferdaming; concrete structures, including chamber water diversions, pipe work and fill. Must have had successful experience on comparable work. State availability, experience, references and salary.

P-9516, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

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P-9363, Engineering News-Record
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SW-9399, Engineering News-Record
330 W. 42 St., New York 18, N. Y.

POSITIONS VACANT
(Continued from page 120)

GENERAL SUPERINTENDENT Wanted. Must be familiar with Pennsylvania Department of Highways procedure. Give references, experience, and salary expected in first letter. P-9558, Engineering News-Record.

CONSTRUCTION MAN for office to do quantity estimating, purchasing, and detailing. Nature of work is Heavy Construction, Industrial Buildings Construction, and Miscellaneous Government Work. Jobs under $500,000.00. Position permanent with well-established firm in Westchester County, New York. Submit data including training, experience, occupation during past three years, age, military status, wage requirement. P-9527, Engineering News-Record.

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18"	4	1 8"	1 32"	28 Oz.
20"	4	1 8"	1 32"	28 Oz.
20"	5	1 8"	1 32"	28 Oz.
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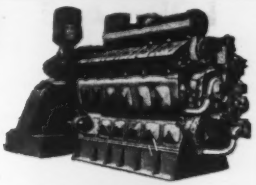

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2—Model T. D. Euclid End Dump

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Location: Cincinnati

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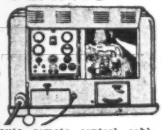
Power Unit PE 197



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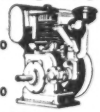
Built With Special Heavy Duty Fly Wheel



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1—Roller, 3 wheel, 10 ton, Galion, New General Motors Diesel Engine.

2—Shovel Supply Co. Maintenance Rollers, Model 151.

1—Allis Chalmers Tractor, HD10W, w/-hydraulic bulldozer blade, new, 1948.

1—International Tractor, Md1.TD9, Front End Loader, 1945, Cable Hough Loader.

2—Ingersoll Rand Air Compressors, Model HKA 500, skid mounted.

1—Ingersoll Rand Air Compressor, Model HK105, mtd. on two wheel trailer.

D8800 and D13000 Caterpillar Engines, skid mounted, can be supplied with either generator or clutch.

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1 x 1 x 1/8	20'
1-1/2 x 1-1/2 x 1/8	20'
2 x 2 x 3/16	20'
4 x 3 x 5/16	40'
4 x 4 x 3/8	40'
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Bins — 10 to 450 ton — 200 barrel to 750 Brl.
10" Hydraulic Dredge

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TD-18 Tractor with Bucyrus-Erie hydraulic blade, new 1949 condition excellent.

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Bay City 30 chain crowd shovel, condition excellent.

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45 foot Boom with 1—20 ft. or 2—10 ft. inserts for Lima Model 34 Paymaster.

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1—Northwest ½ yd. Crane Dragline Model 18 almost like new.

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327 S. 16th Street, Milwaukee 3, Wisconsin

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#200 double unit for sale by original owner. 1,200 lin. ft. 8" pipe, all necessary accessories, tools, etc.

Purchased new and used one job only to pour 15,000 cubic yards concrete.

Absolutely A-1 condition and a genuine bargain.

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Soil testing for construction design and inspection. Specializing in MOBILE LABORATORY UNITS, fully equipped to run all standard soil tests at the site of construction. No more delays in test reports. Results where and when you want them. Pile and Soil Load Bearing Tests.
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Efficient sewage treatment with minimum repairs and maintenance costs were obtained in this modern sewage treatment plant at Salina, Kansas, by combining advanced engineering principles with sound material selection. In seven services where corrosive action is most severe, the engineers specified time-tested wrought iron. Byers Wrought Iron was used for weir plates, scum baffle plates, scum troughs, distributor arms, all gas piping, vertical heat exchanger coils, and all hot water heating piping. Wilson & Company, Engineers, of Salina, Kansas, designed and supervised the construction, Brown and Johnson, Salina, Kansas, were the contractors. Dorr Company supplied the heat exchangers and distributor arms as a part of the necessary equipment.

The selection of wrought iron for these punishing services follows accepted design practice, and is endorsed by performance records that testify to wrought iron's superior corrosion resistance. Engineers have applied wrought iron to practically every "hot-spot" in modern plants. The record speaks for itself.

If you are concerned with the construction of a new sewage treatment plant, or the maintenance of an old one, you will find some helpful information on how to reduce repairs and save money in our bulletin, WROUGHT IRON FOR SEWAGE TREATMENT AND DISPOSAL INSTALLATIONS. We'll be happy to send you a copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Division: New York, N. Y.

WHY WROUGHT IRON LASTS

This notch-fracture test specimen illustrates the unusual fibrous structure of wrought iron—which is responsible for the unusual corrosion and fatigue resistance of the material. Tiny fibers of glass-like silicate slag, distributed through the body of high-purity iron, halt and disperse corrosive attack, and discourage pitting and penetration. They also anchor the initial protective scale, which shields the underlying metal.

BYERS

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WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

NEW PRODUCTS

Chain saw is powered by a 4-hp gasoline engine

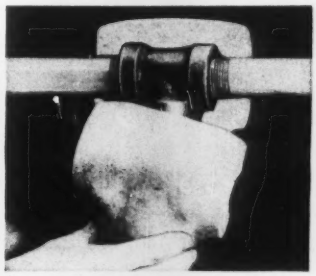
Lightweight chain saw (Model 26-LCS) achieves fast cutting speed through use of a narrow-kerf chain and a Gilmer (U. S. Rubber Co.) gear-toothed rubber-and-fabric belt drive. Balanced design, plus lightweight (27 lb.) and simple pivot action, contribute to easy handling on all cuts—felling, bucking, undercutting, or notching. Throttle buttons on the handle controls all operations. An automatic centrifugal clutch stops chain when engine idles, and prevents overload when chain binds in cut. Concentric-bowl carburetor permits operation at extreme angles. A button release permits rotation of saw from vertical to horizontal cutting positions. Carburetor swivels with the control handle. Built-in governor prevents engine from racing when saw is out of cut. One-man straight blades are available in 18, 23, and 30-in. sizes; two-man straight blades, in 23, 30, and 41-in. sizes; bow saws, in 19 and 25-in. sizes.—Homelite Corp., Dept. EN, Riverdale Ave., Port Chester, N. Y.

Personnel carrier

Unit quickly converts any ½-ton truck into a handy carrier for transporting personnel. The unit slides into the back of the truck, and does not require bolts, screws, or other fasteners. It is made of tubular steel frame with plastic covered seats. Side and top curtains are made of mildew-proof and waterproof canvas. Top is reinforced with hardwood slats. Side curtains are equipped with heavy zippers and clear, plastic windows. —Dixie Tallyho, Inc., Fairburn, Ga.

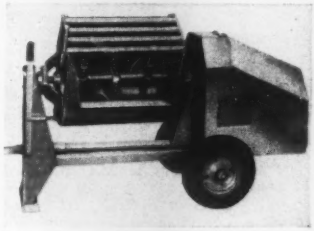
Radiant, acoustical ceiling

New ceiling combines radiant heating with acoustical construction. Perforated aluminum tile-like panels comprise the ceiling surface. They are in mechanical contact with a grid work of hot-water pipes and radiate heat into the room. The perforations admit sound into the ceiling where it is absorbed by a blanket of acoustic-insulating material. An acoustic-thermal blanket is installed wall-to-wall over the heating coil. This ceiling can also be used to provide summer air conditioning.—Burgess-Manning Co., Libertyville, Ill.



Fitting insulation

Molded insulation fits around ells, tees, and 45-deg pipe connections. Birpac insulation combines easy application, neat appearance, and low thermal conductivity. It is molded from Fiberglas, and is available for all standard pipe sizes from ½ to 8 in. Installation is accomplished by placing the two halves over the fitting and then stapling, wiring, or taping them together.—Birma Products Corp., 2665 Main St., Buffalo 14, N. Y.



Plaster, mortar mixer

Mix-Miser ½-bag plaster and mortar mixer has a 3-ft capacity. Over-all width of the No. 3 mixer is 29½ in.; weight is 535 lb, without engine. Charging height of 36¾ in. and hinged protective grid permit safe charging without stopping the machine. Drum can be tipped past discharge position, permitting hosing out and thorough cleaning. Replaceable blade and hoe assemblies are bolted to the mixing shaft. Power can be supplied by gasoline engine or electric motor.—The Knickerbocker Co., 651 Liberty St., Jackson, Mich.

Improved glass blocks

Two improvements to speed installation are announced for Insulux light-directing glass blocks. A special finish applied to the exposed faces is water-repellent, preventing adhesion of mortar to the faces during laying operations. This results in easier and faster cleaning of In-

(Continued on next page)

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BY MERRITT-CHAPMAN & SCOTT

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If you are faced with a construction job that presents special problems because of its size or nature, or the urgency of your time schedule, let M-C & S shoulder it—and the headaches that go with it.

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And even more important, you'll find this organization enjoys the really tough jobs. We have the *drive* and *spirit* that makes mole-hills out of mountainous and often unpredictable obstacles—it's part of the M-C & S *tradition* that, for 91 years, has made men proud to serve under the Black Horse Flag.

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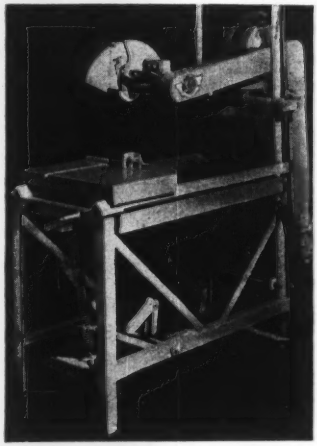
FOUNDED IN 1860... NOW IN OUR 91st YEAR

GENERAL OFFICES:
17 BATTERY PLACE, NEW YORK 4, N. Y.

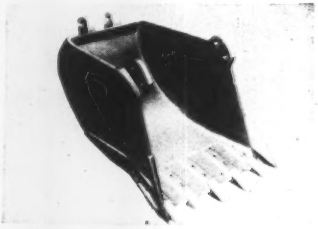
CLEVELAND • BOSTON • NEW LONDON

sulux panels, and eliminates the need for strong acids. Second improvement is an electronically applied gold stripe on the top mortar-bearing edge to indicate proper positioning of the blocks with the correct side facing out and the correct edge on top.—AMERICAN STRUCTURAL PRODUCTS CO., OWENS-ILLINOIS SUBS., TOLEDO, OHIO.



Portable masonry saw

Supreme Speed Kut masonry saw is available in both wet and dry-cutting types. The manufacturer states that it will cut any type or hardness of masonry materials. Handcrank automatically controls and fixes the self-locking wheel-positioning mechanism. Toe pedal feeds cutting wheel into work. Water storage and sediment drawer under the cutting table is easily removed for dumping. Metal guard over wheel directs water down to the work. The saw is powered by a 1½-hp motor.—SUPREME EQUIPMENT CORP., 12415 EUCLID AVE., CLEVELAND 6, OHIO.



Fastback hoe dipper

Addition to Esco bucket line has integrally cast tooth holders in a long projected lip to produce a clean bit and cradle and carry with ease. Six widths of side cutters, available for

(*Continued on page 136*)

NEW JENKINS VALVES for Safety and Economy in L.P.G. Services

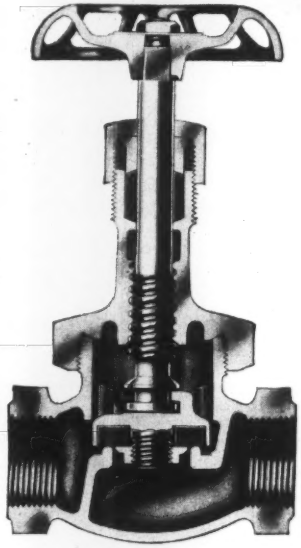


Fig. 506 Bronze Globe
400 lbs. O.W.G. ¼" to 2"

Fig. 507 Bronze Check
400 lbs. O.W.G. ¼" to 2"

Fig. 508 Bronze Angle
400 lbs. O.W.G. ¼" to 2"

Liquified Petroleum Gas (butane-propane), commonly known as "bottle gas", has become a popular domestic fuel, and is now being widely used in industry. Piping systems for handling these gases must be controlled by valves specially designed for this hazardous service.

These new Underwriters' Approved Jenkins Valves for L.P.G. service offer strength and safety well beyond specified requirements. They are built to the same quality standards that make all Jenkins Valves the economy-wise choice for any service.

Where Gate Valves are required for L.P.G. service, Jenkins Fig. 270-U offers the proper ratings.

Because of their superior safety features, Jenkins L.P.G. Valves are also recommended for air, gasoline, oil, and similar services where exceptionally rugged, specially tested valves are needed. For complete details and dimensions, get the new Jenkins L.P.G. Valve folder, Form 197. Use the coupon. Jenkins Bros., 100 Park Ave., New York 17, N. Y.

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EXTRA HEAVY, REINFORCED BODY. Liberally proportioned construction, with reinforcing rib along center line, and heavy lug ends. Will take all ordinary pipe strains without distortion, and provides a factor of safety far above any L.P.G. service needs.

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IMPROVED COMPOSITION DISC Meets every test of L.P.G. service. Retains resilience through entire range of liquid and gaseous phases from −50 F. to +150 F.

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ALL OTHER PARTS SPECIALLY DESIGNED and proportioned to meet rigorous requirements of critical L.P.G. service. Construction features of Fig. 507 Check and Fig. 508 Angle same as Fig. 506 Globe.

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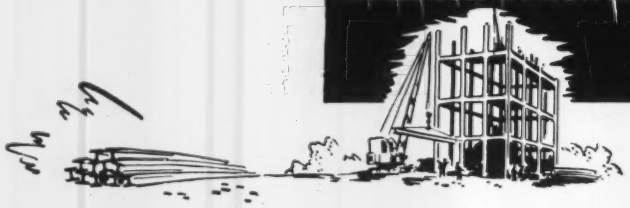

In many ways steel plays a vital role in building a rearmed America — a strong America. In armament — in defense products — in moving the weapons of war — steel is basic-important.

International Steel Company is thankful that its know-how — and its long experience in working with steel — are contributing in many ways to this national effort.

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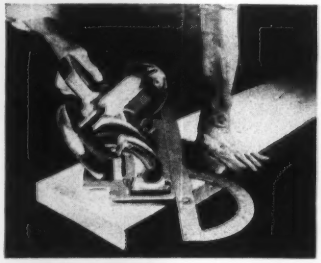
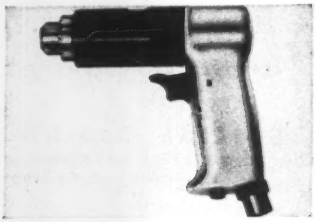
each dipper size, are interchangeable on ¾-yd lip to 2½-yd dippers. Heel of dipper has been practically eliminated by a long streamlined curve, cutting down drag and heeling action. —Electric Steel Foundry Co., 2141 N. W. 2nd Ave., Portland, 10, Ore.



Saw protractor

Guide for power sawing consists of a straight edge, segment clearly calibrated in units of 1 deg, and an easily movable holding arm. Desired angle is set by loosening a wing nut on the under side of the holding arm. In operation, side of shoe of the power saw is lined up with the protractor's straight edge, and the saw advanced along this edge.—The Black & Decker Mfg. Co., Towson, 4, Md.



Air-powered small drill

Heavy-duty drill features: Stub-tooth gear train, built-in lubricator, sealed spindle bearing, and a chuck guard for safety. The 9DBW-28A has an over-all length of 5¾ in., and is ⅛ of an inch from side to center of the spindle.—Reed Roller Bit Co., Cleco Div., 5125 Clinton Drive, Houston, Tex.

Temperature regulator

Self-contained temperature controller features a clearly marked adjusting dial to permit exact setting in degrees Fahrenheit. It is available in two styles ½ through 4 in. They are provided completely assembled and requires no linkage or adjustment either before or after installation.—Barber-Colman Co., Rockford, Ill.

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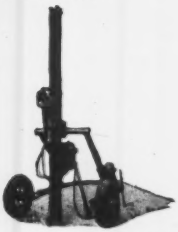
operates two of the new FM-3 Wagon Drills



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MANUFACTURERS' PUBLICATIONS

Industrial lighting – Comprehensive manual (48 pp) covers all phases of "Planned Lighting for Industry". Bulletin LD-4 discusses the various aspects of industrial lighting and how it affects production and labor relations; how to achieve effective lighting; and describes, in detail, six recommended lighting systems for industry. It compares fluorescent, mercury, and filament lighting; describes types of luminaires; discusses brightness and color conditioning; and lists specific techniques for special seeing needs.—General Electric Co., Lamp Dept., Nela Park, Cleveland 12, Ohio.

Comparative heating costs—Chart provides a yardstick for determining comparative costs of fuels used for heating dwellings. The chart takes into account the common differential factors and is applicable wherever automatic heating equipment is used. Fuels listed are anthracite coal, oil, manufactured gas, and natural gas. The chart is based on data in the University of Illinois Small Homes Council Bulletin G3.5 — Anthracite Institute, 101 Park Ave., New York 17, N. Y.

Insulated bushings—Metallic conduit bushings designed to provide protection from abrasion of cable insulation and accidental grounds are described in a 1-p bulletin. Bushends require no inside locknuts and feature light weight. Other features and specification data are listed in the bulletin.—Buchanan Electrical Products Corp., 1290 Central Ave., Hillside, N. J.

Bulldozers – Sixteen-page booklet, Form 30157, explains features of Caterpillar dozers including the new 8U. The bulletin describes tilt and angling adjustments, explains the advantages of the pitch adjustment, and describes other features of construction and operation. Specifications are listed for the complete Caterpillar line. Also described, are the cable or hydraulic power-control units. — Caterpillar Tractor Co., Peoria 8, Ill.

Rust preventives – Chemically inhibited coatings designed to prevent metal loss under most corrosive conditions are described in this 8-p bulletin. Information in the bulletin includes: Selection of the proper No-

(Continued on next page)

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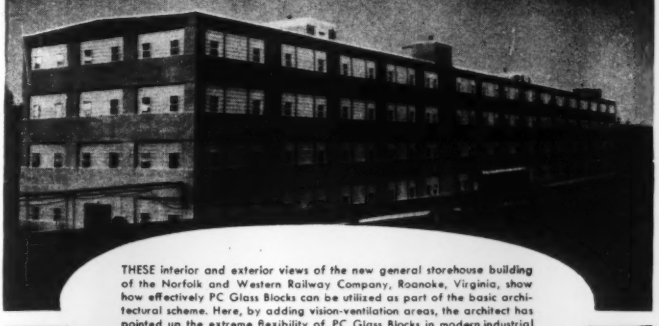
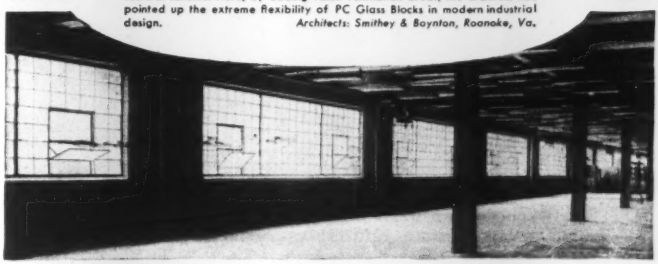
PC GLASS BLOCKS



THESE interior and exterior views of the new general storehouse building of the Norfolk and Western Railway Company, Roanoke, Virginia, show how effectively PC Glass Blocks can be utilized as part of the basic architectural scheme. Here, by adding vision-ventilation areas, the architect has pointed up the extreme flexibility of PC Glass Blocks in modern industrial design. *Architects: Smithey & Boynton, Roanoke, Va.*



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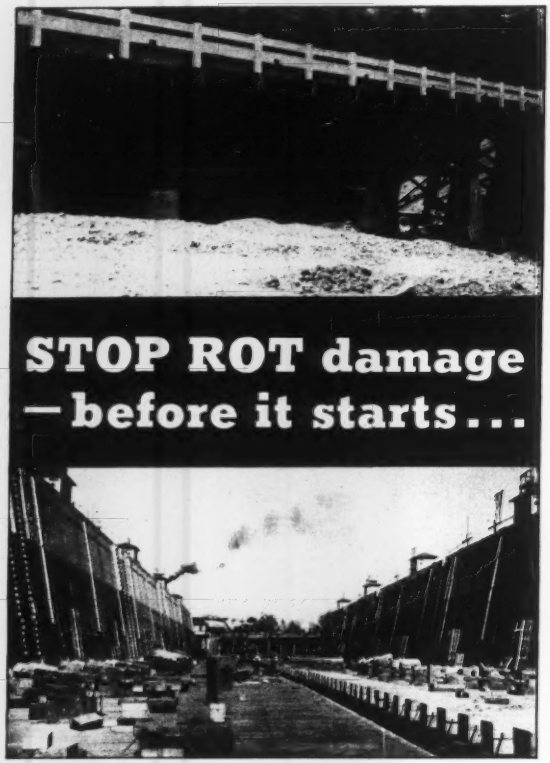

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Ox-Id product; general recommendations according to degree of protection required; cleaning of metal surfaces prior to coating; general description of 4 types of No-Ox-Ids; and detailed information about specific consistencies available in the four types. — DEARBORN CHEMICAL CO., 310 S. MICHIGAN AVE., CHICAGO, ILL.

Centrifugal pumps—Latest developments in a line of single-stage split-case centrifugal pumps are covered in Bulletin 5004-A. All pumps listed are available for direct-connection to electric motors, steam turbine, gasoline engines, or belt drive. A performance table simplifies selection of individual units to meet specific requirements for capacity and head. Capacities range from 25 to 4,000 gpm, with total heads from 20 to 300 ft. Color illustrations show important elements of construction. Detailed specifications and dimension tables complete the pump data.—THE DEMING CO., SALEM, OHIO.

Wall forms—Eight-page catalog is a revised directions booklet on use of wall forms. Complete details are listed for erection of the forms including panel alignment, stripping, spacing of ties, safe work load for ties, and pressures that forms will stand. Information is included on how to obtain the best performance and longest use of forms. Illustrated information is included on accessories that are available.—SYMONS CLAMP & MFG. CO., 4265 DIVERSEY AVE., CHICAGO 39, ILL.

Hyster catalogs—Bulletin 1170 contains 16 pages of information on the Hystaway excavator-crane. This tractor-mounted machine can be used as a shovel, dragline, crane, backhoe, or clamshell. Bulletin 1438 describes the Hyster Grid Roller for bituminous road salvage. A third catalog, now available, describes the Model MHS straddle truck for handling long structural members.—HYSTER CO., 2953 N. E. CLACKAMAS ST., PORTLAND 8, ORE.

Masonry-saw blades—Titled "How to Cut Blade Costs in Masonry Cutting", this data book contains complete information on use and care of masonry-saw blades. It tells how to determine cutting costs; how to determine the proper blade for various materials; how to run cutting-cost tests; explains how masonry blades are made and how they cut; explains the various types of cuts; and contains many helpful hints on the proper use of blades. — EVEREADY BRIKSAW CO., 1507A S. MICHIGAN BLVD., CHICAGO 5, ILL.

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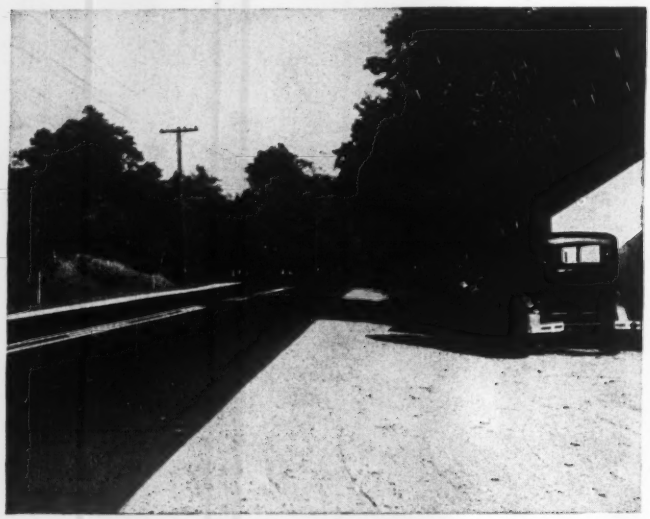

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Relieving platform, supporting New York's East River Drive, rests on 72,000 creosoted piles. Wood form, pictured here, carries reinforced concrete slab.

72,000 CREOSOTED PILES support Famous Parkway

New York's East River Drive, completed in 1942, is one of the city's most impressive waterfront parkways. It is about 7 miles long, and carries two-way, high-speed traffic in 6 lanes. For a distance of 4.3 miles, relieving platform bulkheads were built along the shore of the East River to support the highway. These relieving platforms rest on approximately 72,000 creosoted timber piles, driven offshore in water 20 to 30 feet deep.

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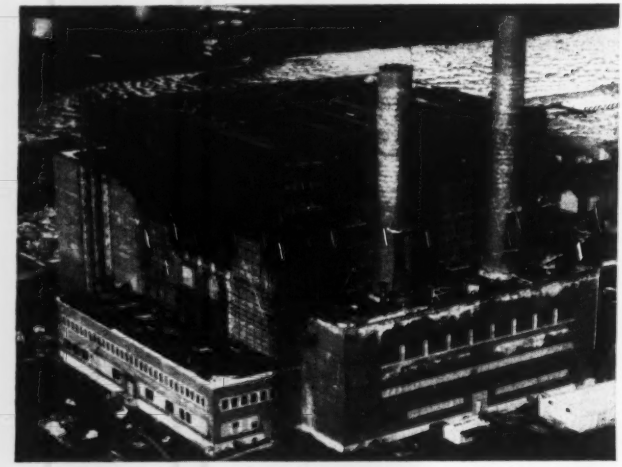


THE HEARN STEAM GENERATING PLANT in Toronto is one of eight named for living engineers and administrators by Canada's Hydro Electric Power Commission of Ontario.

A salute to the living

The Hydro Electric Power Commission of Ontario is honoring living engineers.

At its 42nd annual meeting in Toronto, nine men—all but one of them alive and active (none of them prime ministers)—were singularly honored by the commission when it named after them nine principal generating and transformer stations.

The move sets a precedent of some kind. New names are in contrast with the prosaic, the political, or the geographical.

Named after **Richard L. Hearn,** now chief engineer and general manager of the Ontario Hydro, is the great steam generating station under construction to serve Toronto. The new plant will have a capacity of 536,000 hp. and will be in operation by 1952.

Otto Holden, assistant general manager in charge of engineering, has had his name given to the Le Cave hydro station, now under construction on the Ottawa River. This new plant will be in operation by 1952 and have a capacity of 256,000 hp.

• **Hearn and Holden**—Top direction of the Ontario Hydro now is in the hands of these two engineers who have been closely associated with its activities for many years. Just prior to World War II, Hearn was a special assistant to T. H. Hogg, then chairman and chief engineer of the commission. During the war he went into government service where he made an enviable record as chief engineer on the construction of Canada's synthetic rubber plant at Sarnia. Following completion of that work he was brought back to the Hydro as its general manager and chief engineer.

Holden, before he was advanced to his present position, was the commission's chief hydraulic engineer from 1937 to 1947, during which time he was responsible for the design and construction of all hydraulic power plants, storage works and other hydraulic structures for the Ontario commission.

• **A big six**—Other men honored included **A. W. Manby,** at present assistant general manager in charge of administration, who will find his name on Toronto's Kipling Ave. transformer station.

Named after **J. Clark Keith,** for many years general manager of the Windsor Utilities Commission, is the new steam generating station at Windsor on the Detroit River.

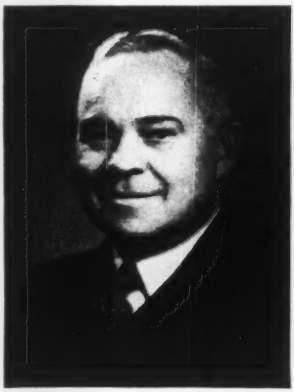
For **E. V. Buchanan,** for many years general manager of the London Utilities Commission, Ontario has renamed the Westminster frequency changer and transformer station in London.

R. H. Martindale, manager and secretary of the Sudbury Hydro Electric Commission was also honored. His name was given to the frequency changer and transformer station at Sudbury.

Ross L. Dobbin, general manager of the Peterborough Utilities Commission is to have the present Peterborough transformer station named after him.

Big surprise was the naming of the tunnel generating station in northern Ontario after **George W. Rayner,** president of the Rayner Construction Co. of Toronto, contractors on the job.

The late **Sir Adam Beck** was also honored. Named after him are two stations on the Niagara River at Queenstown.



Otto Holden

Richard L. Hearn

MICHIGAN TRUCK EXCAVATOR...

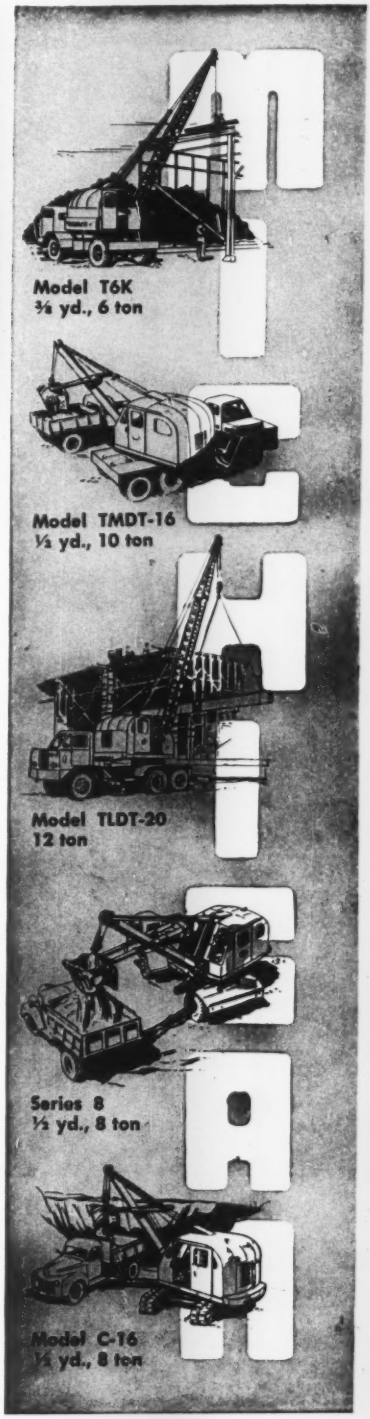
rated "TOPS"

by City of Birmingham, Michigan

"Thirteen years is a lot for a machine, and we beat it badly. It was a good old machine." That's what Marx Fall, Superintendent Department of Public Works, said about the MICHIGAN ⅜ yd. truck hoe owned by the city for thirteen years.

The City of Birmingham now operates a new MICHIGAN S-4 ½ yd. truck hoe which works 48 hours a week trenching for water and sewer connections, much of the time in blue clay. Operator Tom Griffin said: "It operates easily and against other ½ yd. machines our MICHIGAN ditches faster. It's easier to drive, too."

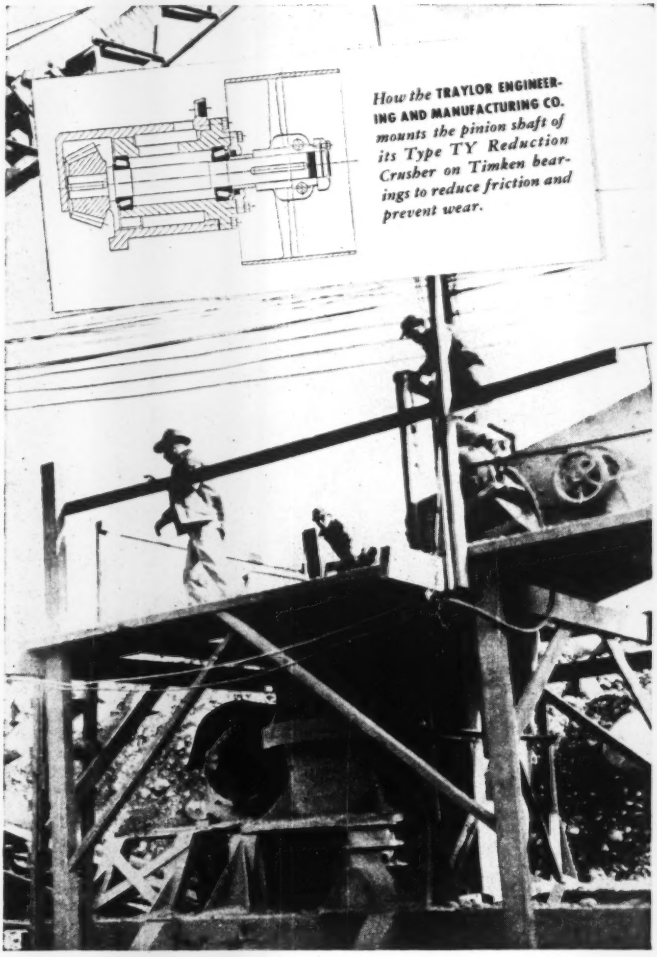
Mr. Fall added: "We need the rubber tired mobility and the truck speed of the MICHIGAN. Its short wheel base is particularly good for our work."



MICHIGAN POWER SHOVEL COMPANY

500 Second Street, Benton Harbor, Michigan, U. S. A.

Crushes rock...squeezes costs... with help of TIMKEN® bearings



How the **TRAYLOR ENGINEERING AND MANUFACTURING CO.** *mounts the pinion shaft of its Type TY Reduction Crusher on Timken bearings to reduce friction and prevent wear.*

OPERATING costs are kept to a minimum in the Traylor Type TY Reduction Crusher. Timken® tapered roller bearings on the pinion shaft eliminate the need for an outboard bearing. They assure long, dependable, trouble-free service—there's less time out for maintenance, less chance of breakdowns.

Since Timken bearings hold the pinion shaft in rigid alignment, deflection and end-movement are minimized. Gear teeth mesh smoothly and accurately, greatly reducing wear. The heavy thrust loads of meshing pinion and ring gears within the crusher are easily absorbed. That's because the tapered construction of Timken bearings enables them to take *both* radial and thrust loads in any combination. And there's *extra* load-carrying capacity as well, due to line contact between rollers and races.

Tighter, lubricant-retaining closures are permitted, keeping out abrasive dirt and grit. Because of incredibly smooth surface finish and true rolling motion, Timken bearings operate freely... frictionlessly.

Timken bearings are engineered for the job, precision manufactured, and made of the finest steel ever developed for roller bearings—Timken fine alloy steel. They normally last the life of the machine in which they are used.

The Traylor Company also uses Timken bearings in their rotary dryers and kilns. It will pay you to have them in the equipment you build or buy. Always look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.

WE MAKE OUR OWN STEEL

The special grade alloy steel which gives Timken bearings their strength and resistance to wear, is made in our own steel mills.

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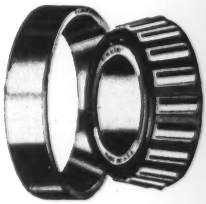
TAPERED ROLLER BEARINGS



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